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The Demand and Price Situation for Forest Products

SAWLOGS

STUMPAGE

NAVAL STORES

PULPWOOD

FUELWOOD

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FOREWORD

This report was prepared as background information for the Outlook Conference held by the U. S. Department of Agriculture in November 1957. The analysis of timber products was made by the Division of Forest Economics Research, Forest Service, and the analysis of naval stores by the Tobacco Division, Commodity Stabilization Service.

Much of the information on stumpage and log prices was taken from the comprehensive report "Price Trends and Relationships for Forest Products," published by the Forest Service in the spring of 1957 (29).¹ The brief analysis of the outlook for 1975 is based on assumptions concerning population trends, gross national product, and other related factors contained in a report, "Timber Resource Review," issued in preliminary form by the Forest Service in September 1955 (27). Both reports are available upon request from the U. S. Department of Agriculture, Forest Service, Washington 25, D. C.

¹Numbers in parentheses refer to Literature Cited p. 23.

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The Demand and Price Situation for Forest Products

OUTLOOK SUMMARY

The volume of industrial roundwood (excluding fuelwood) produced in the United States in 1957 is estimated at 9.2 billion cubic feet. This is about 5 percent less than the peak of about 9.7 billion cubic feet produced in 1956. Sawlogs are expected to account for 59 percent of the roundwood produced in 1957, pulpwood 26 percent, veneer logs 6 percent, and miscellaneous products such as cooperage logs and bolts, mine timbers, and poles and piling the remaining 9 percent.

Stumpage prices in 1957 as indicated by prices received on National Forest timber sales for Douglas-fir, ponderosa pine, southern pine, and sugar pine are near record levels. Stumpage is not a homogeneous commodity and prices received for different timber sales vary considerably with quality, logging and processing costs, and marketing practices and conditions.

Sawlogs.--Sawlog production in the United States in 1957 is estimated at 34.8 billion board-feet lumber tally. This is about 6 percent less than production in 1956 and 10 percent less than production in 1955. The West is expected to account for about 53 percent of the sawlogs produced, the South 34 percent, and the North 13 percent.

The decline of sawlog production since 1955 reflects a drop in residential construction--the most important single use of lumber. Since 1955 nonfarm dwelling units starts have declined 27 percent, falling from 1.3 million in that year to 1.1 million units in 1956, and to an estimated 970 thousand units in 1957. It is generally anticipated that residential construction will increase substantially within a few years as the upsurge in birthrates that started in the early 1940's results in an increase of new families.

Sawlog prices are near an alltime high. Currently Douglas-fir sawlogs delivered at towable waters in western Oregon and western Washington are selling at prices

averaging from about \$67 for grade 1 logs to about \$45 for grade 3 logs--a level somewhat below 1956. On the basis of fragmentary information, prices for other sawlog species in other regions of the country seem to have followed a somewhat similar trend, reaching a peak during 1956 and declining slightly in 1957.

Pulpwood.--Pulpwood production in the United States during 1957 is estimated at 34 million cords. This is about 3 percent less than production in 1956 but 10 percent above the 30.9 million cords produced in 1955. The decrease in pulpwood production in 1957 reflects a decrease in demand for paper and paperboard and marks what is believed to be a temporary reversal in a trend that has been sharply upward for many years.

Softwoods, such as southern pine, western hemlock, Douglas-fir, spruce, and true firs are expected to make up about 83 percent of the pulpwood produced in 1957. It is estimated that about 58 percent of the pulpwood cut in 1957 will come from the South, 22 percent from the West, and the remaining 20 percent from forests in the North.

Pulpwood prices at local points of delivery are now at an alltime peak, at approximately the level prevailing in 1956. In the Southeast, the price of rough pine pulpwood at local point of delivery currently amounts to \$15.30 per cord. This is nearly the same as prices received in 1956 but reflects a modest increase over the \$14.40 per cord received in 1955.

Veneer logs.--The volume of veneer logs produced in the United States in 1957 is estimated at 3.5 billion board-feet, including 2.5 billion board-feet of softwoods and 1 billion board-feet of hardwoods. Total production in 1957 is about 5 percent less than production in 1956, when a peak of 3.7 billion board-feet of veneer logs was produced. The decline in production in 1957

primarily reflects the decrease in demand for softwood plywood resulting from the drop in residential construction.

Currently the price of Douglas-fir veneer logs in western Oregon and western Washington ranges from an average of \$82 per thousand board-feet for number 3 peelers to an average of \$110 per thousand board-feet for number 1 peelers. These prices are somewhat below the levels attained in 1956, the previous peak year.

Prices for hardwood veneer logs are also at or near a peak in 1957, although they show wide ranges in value. Black walnut veneer logs, for example, are being quoted at from \$50 to \$375 per thousand board-feet in Illinois.

Other roundwood timber products.--The production of other industrial roundwood timber products such as cooperage logs, poles and piling, fence posts, hewn ties, round mine timbers, and a miscellaneous assortment of other products amounted to about 700 million cubic feet in 1952. Since then

trends in the production of these products have been variable--some increasing and others decreasing. In total, however, there has apparently not been much change in the level of production. Prices vary widely depending upon the product, species, and region.

Naval stores.--Overall naval stores production is expected to be lower in 1957 with declines in gum and steam-distilled wood naval stores more than offsetting a sizeable increase in tall oil rosin and a slight rise in sulfate wood turpentine. Both domestic consumption and exports of rosin and turpentine are likely to be lower than in 1956. Rosin stocks are expected to be higher by April 1, 1958, as compared with a year ago, mainly because of increased CCC holdings. A slight increase is probable in turpentine stocks this year as compared with 1956.

Prices for turpentine and top rosin grades are expected to rise during the next few months. Not much price change is expected in medium grade rosins.

THE DEMAND AND PRICE OUTLOOK FOR STUMPAGE

Production of industrial roundwood near record levels

The volume of industrial roundwood (i.e. all round products except fuelwood) produced in the United States in 1957 is estimated at 9.2 billion cubic feet. This is about 5 percent less than estimated production in 1956, the previous peak year (fig. 1, app. table 1). Sawlogs are expected to account

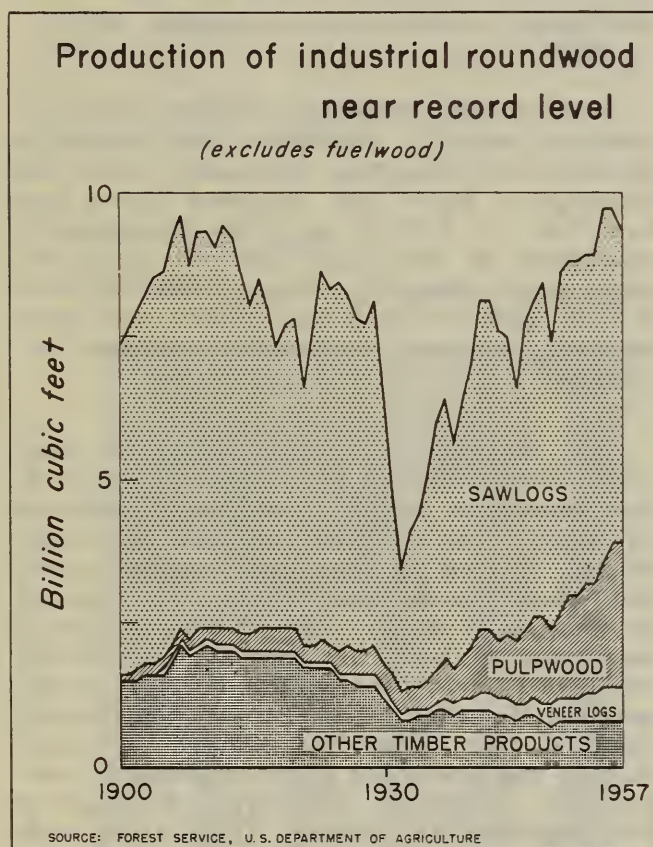


Figure 1

for 59 percent of the roundwood produced in 1957, pulpwood 26 percent, veneer logs 6 percent, and miscellaneous products such as cooperage logs and bolts, mine timbers, and poles and piling the remaining 9 percent.

During the agricultural and industrial expansion of the early 1900's, the volume of industrial roundwood produced reached a level of about 9.6 billion cubic feet in 1907. As a result of the substitution of other materials for industrial timber products, and such factors as advances in the

utilization of raw materials, and improvements in the processing and treatment of timber products, a substantial decrease in production occurred between 1907 and 1930. As production climbed after the 1930's, the volume of industrial roundwood products again increased to a new peak of 9.7 billion cubic feet in 1956. This record level of production reflects a comparatively high rate of lumber consumption, a long-term rapid increase in pulpwood products consumption, and the more recent rapid increase in the consumption of veneer and wood fibre products.

Stumpage prices near the alltime high

Stumpage prices during the first quarter of 1957, as indicated by the prices received in National Forest sales of Douglas-fir, ponderosa pine, southern pine and sugar pine, are at or near record levels (fig. 2, app. table 2). For example, the

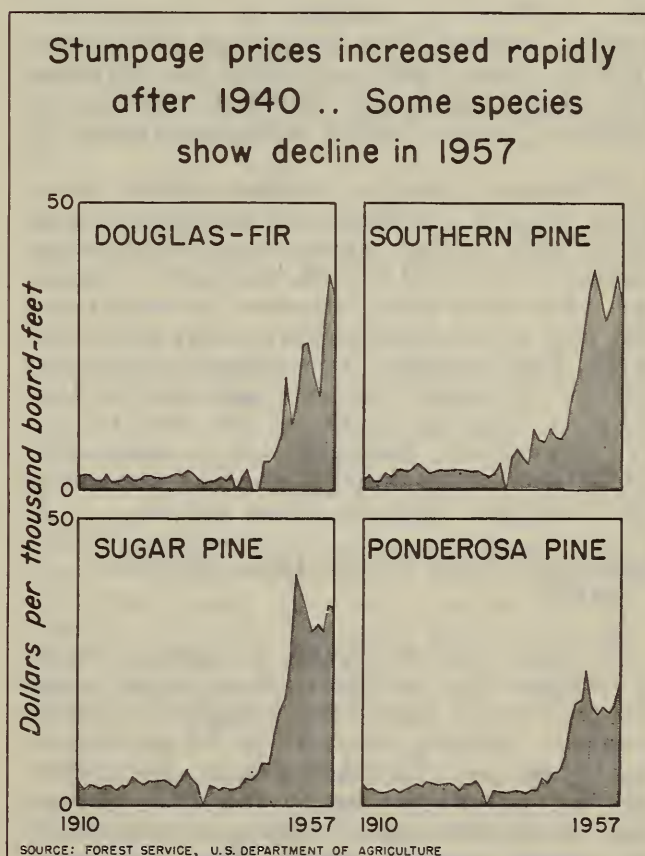


Figure 2

price of Douglas-fir stumpage currently amounts to about \$33.80 per thousand board-feet, about 10 percent below the all-time peak of \$37.70 reached in 1956. The stumpage price of southern pine showed a somewhat similar pattern. On the other hand, stumpage prices for sugar pine showed little change from the 1956 high, and the price of ponderosa pine increased 16 percent to a peak of \$31.60 per thousand board-feet.

The recent softening in stumpage prices for some species is largely attributable to a decrease in demand for roundwood, particularly sawlogs. The volume of roundwood produced has decreased some 4 percent since 1955.

While these prices are based on National Forest timber sales, fragmentary data in a number of regions suggests that prices of comparable private stumpage have followed a similar trend. Studies of private sales in South Carolina, in which timber was marked for cutting by Service foresters, showed that stumpage prices for private sales when adjusted to Scribner rule were much the same as prices for National Forest timber in the same area. (2)

Stumpage prices of public timber, however, do not necessarily indicate prices for private timber, since much of the public timber sold is old growth, and public stumpage sales are often affected by conditions that may not be required in private stumpage sales. For example, a purchaser of National Forest stumpage may be required to dispose of logging slash, to cut snags as a fire-prevention measure, or to make certain stand improvements such as removing cull trees and thinning dense stands.

Stumpage prices before 1940 relatively stable

Between 1910 and 1940, stumpage prices of Douglas-fir, southern pine, sugar pine, and ponderosa pine were relatively stable, generally ranging from \$2 to \$5 per thousand and board-feet. Adjusted prices, derived by dividing actual prices by the BLS wholesale commodity price index, showed about the same general trend. The relatively stable stumpage prices prior to 1940 were the result of a number of factors. For many years timber was so plentiful in relation to

demand that it had little value. This, along with decreasing demand and forced liquidation that resulted from the pressure of carrying charges on borrowed funds used to purchase land and timber, explains in part why stumpage prices showed little change prior to the 1940's. Higher logging and processing costs, reflecting a decline in timber quality and greater inaccessibility, also tended to depress stumpage prices during this period.

Stumpage prices increased rapidly after 1940

Since 1940, stumpage prices have increased rapidly. Southern pine stumpage prices, for example, increased from an average of \$4.50 per thousand board-feet in 1940 to \$37.40 in 1956. Douglas-fir stumpage in this same period, increased even more rapidly rising from \$2.30 to \$37.70 per thousand board-feet, and other species showed somewhat similar increases.

The increase in stumpage prices after 1940 was influenced by a number of factors, but primarily reflects changing conditions of supply and demand. Inflation following World War II had an appreciable effect, but when prices are deflated or adjusted to a constant-dollar basis by dividing actual stumpage prices by the all commodity wholesale price index, the rise in prices was still large. The rapidly increasing demand for industrial timber products during the post war period tended to emphasize stumpage scarcity, particularly for high-quality timber. This, along with expectations of substantially higher potential demands in the future, led to competition for timber resources and to considerable acquisition of forest land for forestry purposes, with consequent increases in land and stumpage prices.

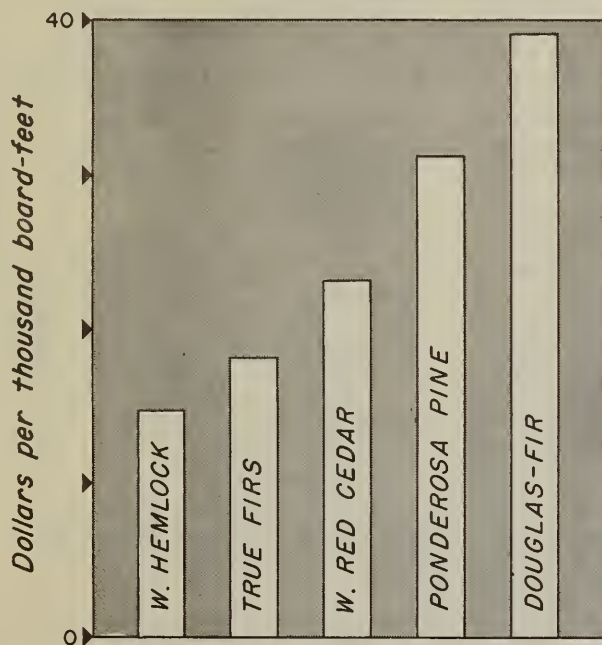
Despite the rapid increases in stumpage prices since 1940, there has been some depressing price factors. Timber quality and volumes per acre have continued to decline, and in the West it has been necessary to log remote areas in rough terrain. The resulting increases in logging and processing costs have to some extent held down the price of stumpage.

Stumpage prices for individual sales vary widely

Stumpage is not a homogeneous commodity, and prices received for different timber sales vary considerably with species, quality, availability in relation to demand, logging and processing costs, and marketing practices and conditions.

With respect to species, Douglas-fir which produces strong and durable construction lumber commands a higher price than western hemlock and most true firs whose wood is lighter, weaker, and less durable (fig. 3). Part of the price differential between species, however, may reflect tree

Wide differences in stumpage prices among species



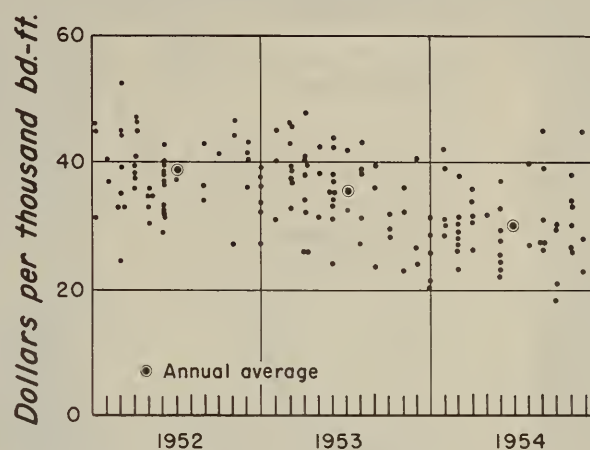
SOURCE: FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Figure 3

quality, proportion of defect, relative abundance, and logging costs.

For any given species, stumpage prices for individual sales may differ considerably from the average for that species (fig. 4). Such differences in part reflect tree quality. For example, an analysis of the prices of the individual sales shown

Stumpage prices vary widely in National Forest sales of southern pine



SOURCE: FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Figure 4

in figure 4 indicated a strong correlation between stumpage prices and the size and quality of trees sold (3). Although bidders did not ordinarily arrive at bid prices for a given sale by means of precise estimates of volume by quality classes, they did recognize the better quality stands and were willing to pay higher prices for them.

Differences in stumpage prices in part reflect the utility of the trees in the various uses to which they can be put. In the period 1935-57, for example, the price of National Forest southern pine sawlog stumpage was about 4 times the price of pulpwood stumpage (fig. 5, app. tables 2 and 3). In general prices for trees containing veneer logs are higher than for sawlog trees. On the other hand, stumpage prices are extremely low for fuelwood and distillation wood, which is usually taken from the huge reservoir of timber too small or too poor in quality for other uses.

Stumpage prices also tend to approximate the residual left after logging and processing costs are deducted from the anticipated selling price of lumber or other processed items. Hence where heavy costs are involved in logging remote areas, rough terrain or scattered stands, stumpage prices tend to be low. Other factors such

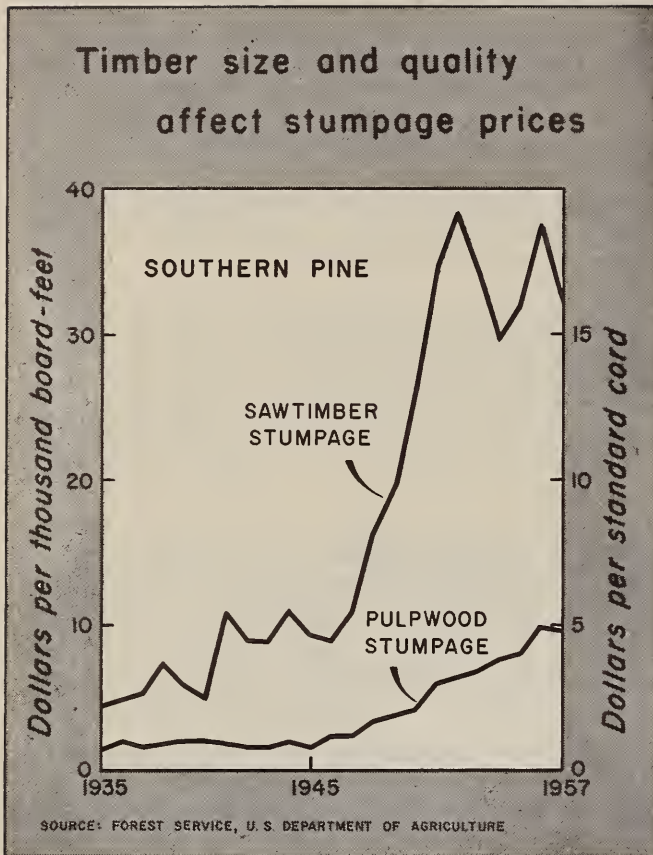


Figure 5

as degree of competition existing for stumpage are often of major importance. In single-bid transactions, for example, stumpage prices tend to be lower than for multibid sales (1, 11, 16, 19). Urgency on the part of the purchaser to buy or the seller to sell; conditions imposed upon buyers to cut selectively or to remove a certain number of defective trees per acre; the size, length and timing of sales; local market conditions, and the degree of interest and knowledge on the part of timber sellers and buyers affect stumpage prices. The use of different log rules and scaling practices also cause variations in volume which affect the unit-sale prices received (7). In actual practice, however, buyers and sellers tend to set prices according to the scale used so that a price approaching true value is usually realized.

Current price information on sales of private stumpage fragmentary

At the present time, data on private stumpage sale prices are available in only seven States that publish at varying inter-

vals reports containing information on stumpage (4, 5, 14, 22, 23, 24, 26). The degree of detail in these reports varies from State to State. In general, the reports are based on timber buyers quotations, and are usually presented as a range of prices per thousand board-feet and/or average prices without specifications as to grade, log rule, other value factors and sampling accuracy. Such sales prices reported by purchasers are often considerably above the actual prices received. This is well illustrated in a study made in North Carolina in 1950 where in a sample of 34 timber sales, purchasers reported \$18.96 per thousand board-feet for an estimated 6.8 million board-feet of stumpage (20). A stump survey to determine the volume of timber harvested showed that 9.1 million board-feet had been cut. Actual sales prices realized by owners thus averaged only 75 percent of the reported price or \$14.15 per thousand board-feet.

Species:	State and source	Price of stumpage per thousand bd.-ft.
Ponderosa and sugar pine	California (22) (Sierra region)	¹ \$11.99
Douglas-fir	California (22) (Sierra region)	¹ 7.82
Southern pine:	Louisiana (5)	
Sawlogs		30.00 - 40.00
Pulpwood		² 8.20
Gums	Louisiana (5)	8.00 - 12.00
White oak	Illinois (4)	³ 20.00 - 100.00
Hard maple	Wisconsin (26)	25.00 - 40.00
Yellow birch	Wisconsin (26)	30.00 - 60.00

¹ Average prices for young growth.

² Per cord.

³ Commercial veneer stumpage.

Present stumpage price quotations need improvement

Roughly half of the timber cut each year is purchased as stumpage from a part of the 4.5 million farm and miscellaneous small private forest ownerships. Stumpage prices to be directly useful in marketing this timber must be based on actual sales data in which species composition, volume of sales, quality, accessibility, and other factors which significantly affect the prices are identified in a standard objective fashion. It is essential that measurements be on a clearly specified basis and that data be obtained from a sampling procedure that results in representative

prices. Better stumpage-price quotations, also require standardized quality grades for logs and trees, and more accurate procedures for identifying and classifying the several factors that affect price.

THE DEMAND AND PRICE OUTLOOK FOR SAWLOGS

Decline in sawlog production in 1956 and 1957

The volume of sawlogs produced in the United States in 1957, as measured by lumber production, is estimated at 34.8 billion board-feet. This is about 6 percent less than production in 1956, 10 percent less than production in 1955, and 24 percent below the peak of 46 billion board-feet reached in 1907 (fig. 6, app. table 4).

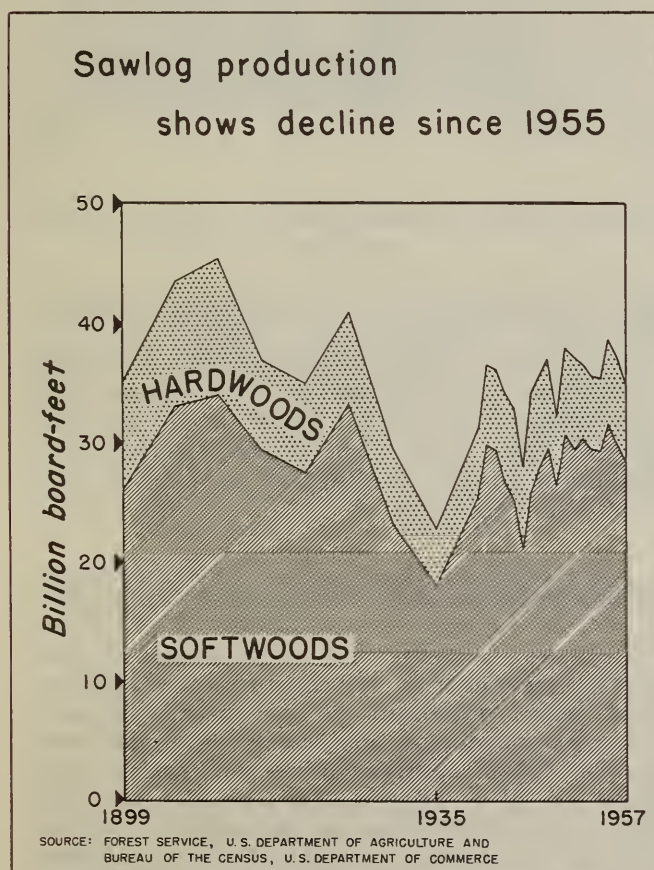


Figure 6

The volume of sawlogs produced is dependent upon the demand for lumber, because domestic sawlog production accounts for most of the lumber consumed in the United States. In the period 1953 through

1957, for example, estimated domestic lumber production averaged 36.8 billion board-feet compared with average imports of 3.1 billion board-feet and average exports of 0.8 billion board-feet. Softwood lumber from Canada has made up most of the lumber imports. Hardwood lumber from tropical countries, while highly important for some special uses, accounted for only a small part of lumber imports.

While the present level of lumber consumption (and sawlog production) is not far below the alltime peak reached in the early 1900's, there has been a decided decline in per capita consumption. Per capita consumption of lumber fell from a peak of 527 board-feet in 1906 to 260 board-feet in 1940. This downward trend was caused largely by the substitution of other materials, including plywood and paperboard for lumber. Since 1939 lumber consumed per person has averaged around 250 board feet per capita. During this period the substitution of other materials for lumber in certain uses has continued, but the substitution has been offset by increased demands for lumber in residential construction and for other uses.

Recent decline in sawlog production reflects drop in residential construction

The decline in sawlog production since 1955 reflects a drop in residential construction--the most important single use of lumber (fig. 7). In 1952 an estimated 16.6 million board-feet or 40 percent of all the lumber consumed in the United States was used in the construction, maintenance, and repair of residential buildings. Since 1955, nonfarm dwelling unit starts have declined 27 percent, falling from 1.3 million in that year to 1.1 million units in 1956 and to an estimated 970 thousand units in 1957 (fig. 8). Nonfarm starts in 1957 are 31 percent below the record of 1.4 million units started in 1950--the peak year of residential construction.

Over the next few years, residential construction may not rise appreciably above the current level in view of the present low rate of family formation, which reflects the low birthrates that prevailed during the 1930's. It is generally anticipated, however, that residential construction will increase substantially within a few

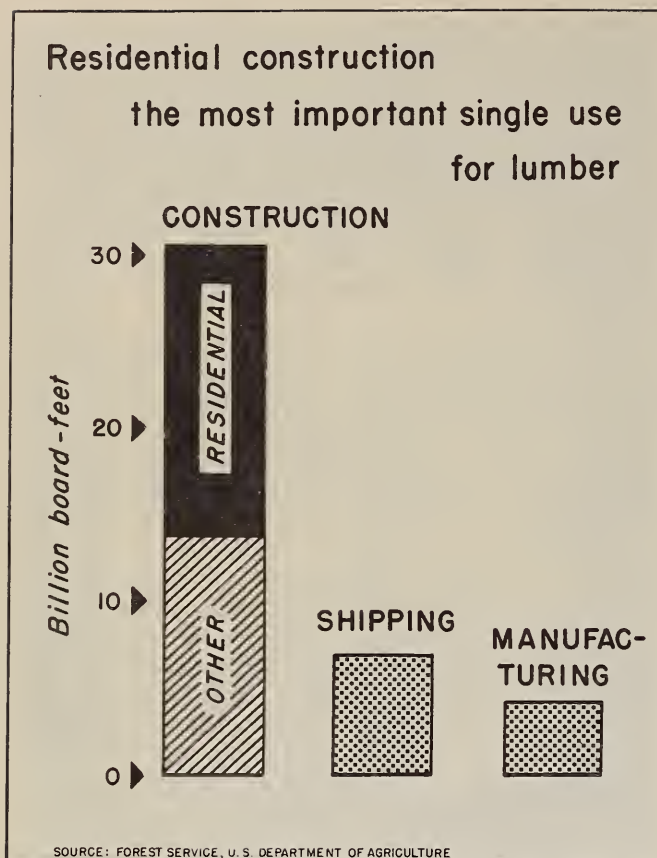


Figure 7

years as the upsurge in birthrates that started in the early 1940's results in increased formation of new families. In the interim, the level of residential construction may be maintained by movement of city population to suburbs, by current high birthrates which present a need for larger houses, and by anticipated increases in disposable income that will permit improvement in the general level of housing. Government policy to provide liberal credit and otherwise encourage construction is also likely to be an important factor.

During 1952 lumber consumption in non-residential construction amounted to 13.7 billion board feet and accounted for 33 percent of total lumber consumption. Over half of this volume was used in construction of industrial, commercial, institutional, recreation, military and public utilities, and the remainder was used on farms, railroads, and mines.

Increases in nonresidential construction in 1957 have partially offset the decline in residential construction and helped sus-

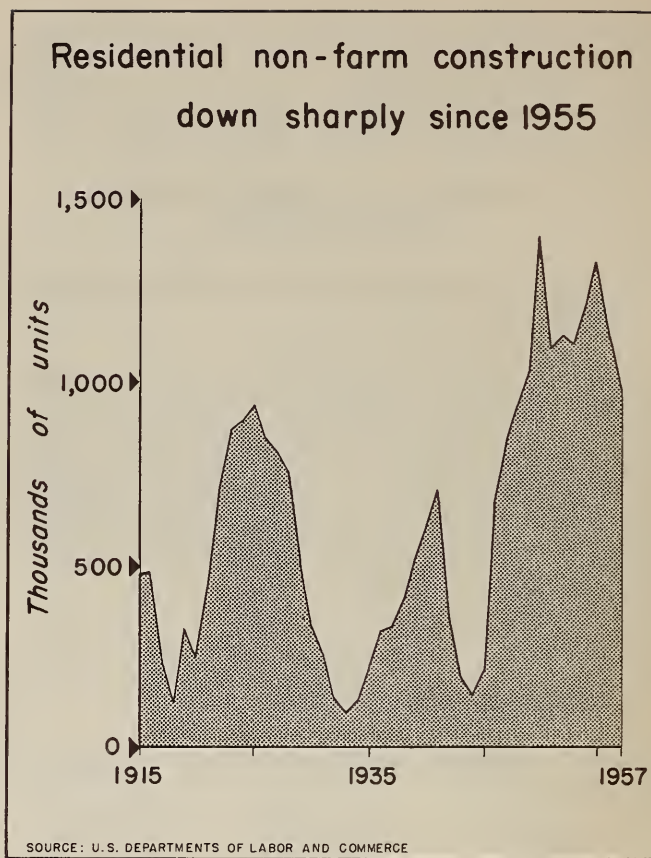


Figure 8

tain the demand for construction lumber. In 1957, nonresidential activity is at a record level with the seasonally adjusted annual rate estimated at 30.6 billion dollars (22.8 billion in 1947-49 dollars)--9 percent and 20 percent respectively, above the level of nonresidential construction in 1956 and 1955 (fig. 9).

Consumption of lumber in the shipment of agricultural and industrial commodities in 1952 amounted to about 6.9 billion board-feet. About 4.2 billion board-feet or 10 percent of all the lumber used in 1952 was consumed in fabricated production. Consumption for these purposes has shown little change in recent years. The demand for shipping materials has increased significantly in response to higher levels of economic activity, but lumber has had strong competition from container board and other shipping materials. Industrial production has also increased, but the substitution of other materials for lumber has tended to hold down lumber consumption for fabricated products. Softwoods have constituted about 80 percent

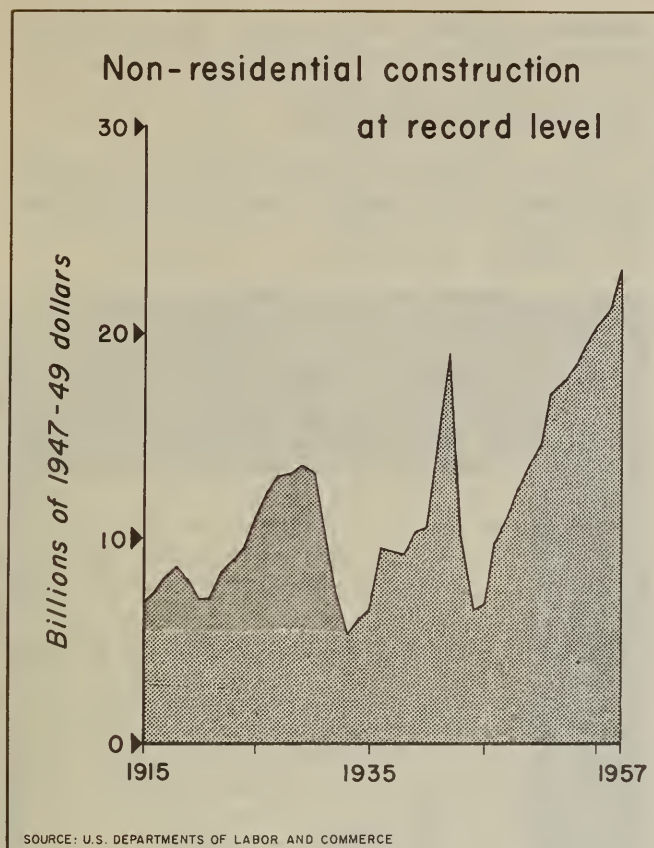


Figure 9

of all the lumber used in the United States. There is, however, a considerable difference between the use of softwood and hardwood lumber by major end uses. In general, softwood lumber is preferred for construction purposes and hardwood lumber for manufactured products. There are some fields of use in which either hardwood or softwood lumber can be utilized.

More than half the sawlogs produced now cut in the West

Sawlog production as measured by lumber production is concentrated in the West.² Lumber production in the West has increased from 3.5 billion board-feet in 1900 to an estimated 18.4 billion board-feet in 1957 (fig. 10, app. table 5). The present western cut accounts for more than half of all the lumber produced in the United States and includes about two-thirds of softwood lumber.

² The West includes the 11 Western States and South Dakota. The South consists of the 12 most Southern States, including Virginia. The North includes the remaining 25 States.

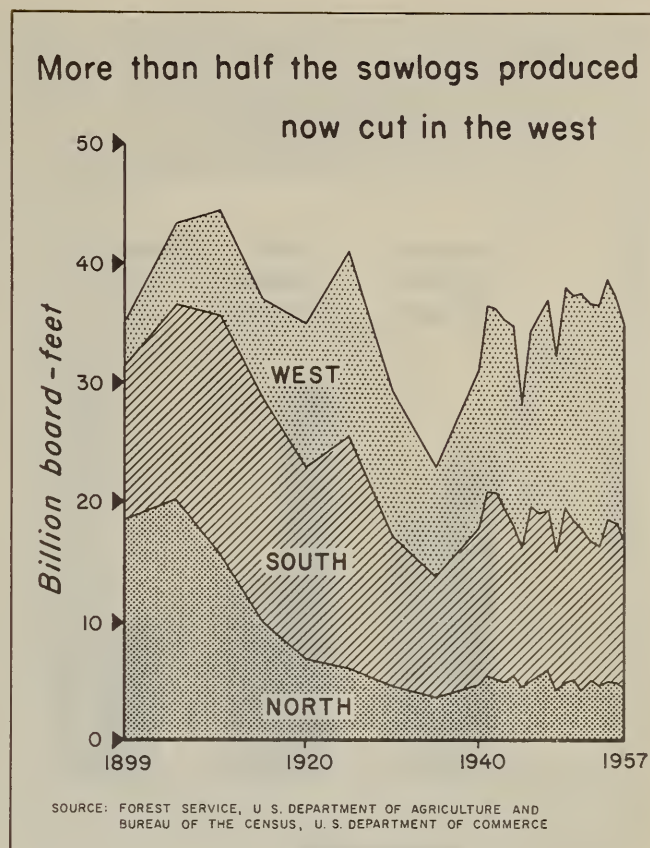


Figure 10

The West is expected to continue to be the most important region in lumber production for some time to come, because of its relatively great wealth of timber (fig. 11). All together, this region contains about 1,345 billion board-feet of sawtimber or two-thirds of the Nation's total supply. In terms of softwoods, the West is in an even better position with 80 percent of the country's softwood volume. Moreover, most of this timber is old growth sawtimber of relatively high quality. Commercial forest lands in the West, however, make up only 24 percent of the Nation's timber-growing acreage.

Sawlog production in the South declined from a peak of 20 billion board-feet in 1910 to 13.3 billion in 1940. Since 1940, there has been no marked trend in lumber production in that region although the estimated production of 11.8 billion board-feet in 1957 is below the average for the period. Softwood lumber cut has declined slightly in relative importance, however, while hardwood lumber has increased.

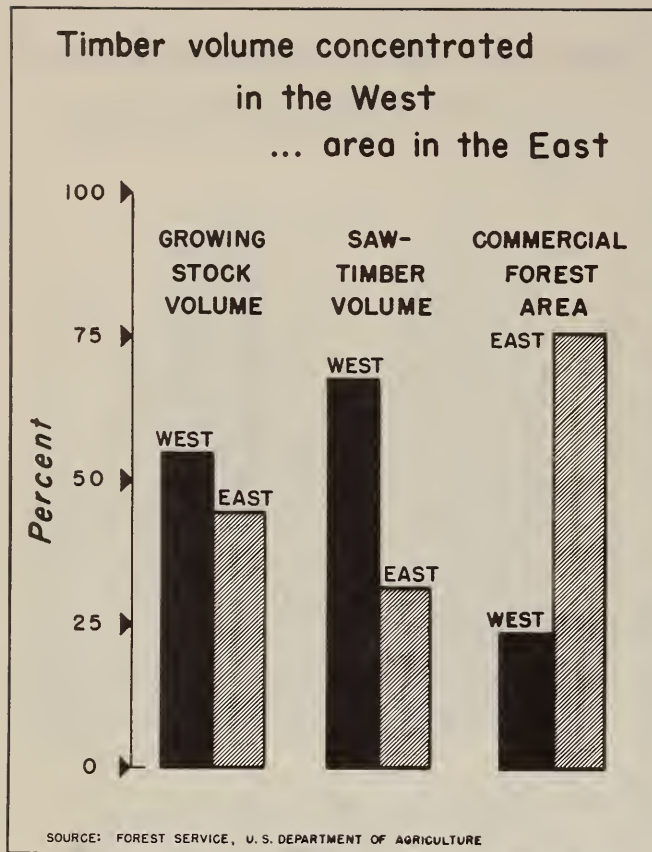


Figure 11

The South contains about 40 percent of the Nation's forest land, 22 percent of the Nation's growing stock, and 17 percent of the sawtimber. Growth rates are high, logging conditions are relatively easy, year-round woods employment is possible, and labor supplies are relatively abundant. Market location is also highly favorable, because distances to the great industrial centers in the North and Midwest are relatively short.

Fifty years ago the North provided half of the lumber produced in the United States, but after the peak production of 20.1 billion board-feet in 1905, lumber production declined to less than 4 billion board-feet in the 1930's. The estimate of 4.6 billion board-feet of lumber produced in 1957 is slightly below the average for the past 15 years.

The North contains 36 percent of the Nation's commercial forest land, 22 percent of the growing stock and 13 percent of the sawtimber, mainly hardwoods. Timber growth in 1952 exceeded cut, but average

timber quality is low and growth is far below potential yields.

Sawlog prices near peak

Sawlog prices as indicated by the prices received at towable waters in western Washington and western Oregon are near the alltime peak (fig. 12, table 6). Cur-

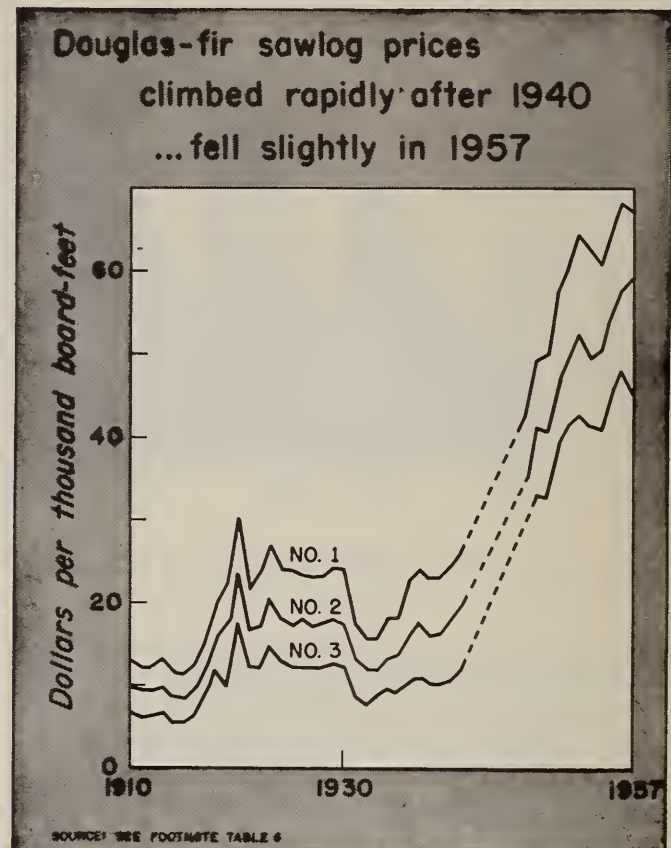


Figure 12

rently, Douglas-fir sawlogs in this area are selling at prices averaging from \$45 for grade 3 logs to \$67 for grade 1 logs. This is somewhat below the prices received in 1956, but above the prices received in 1955.

Since the only important log market in the United States is located in western Washington and western Oregon, comparable price data for sawlogs in other regions are not available. On the basis of fragmentary information, however, it is believed that prices of other sawlog species have followed a somewhat similar trend reaching a peak during 1956 and declining slightly in 1957.

In general, the price of sawlogs follows the price of lumber. The wholesale price index of lumber (1947-49 = 100) reached a peak of 130.6 in April of 1956 (30). Since then prices have declined steadily, falling to 119.6 in August 1957. The present level of lumber prices is about the same as the level in 1952.

Since 1940 Douglas-fir sawlog prices have increased sharply both in current and in adjusted dollar terms. This increase was more rapid than the increase in stumpage prices but approximately the same as for lumber (fig. 13).³ Increased wage rates in logging camps had some effect on increased log prices, but this was at least in part offset by greater mechanization of logging operations that tended to increase efficiency and hold down costs.

Sawlog prices vary with quality

The price of sawlogs varies with quality as measured by log size and freedom from knots, decay, and other defects (fig. 12, app. table 6). Currently, for example, grade 1 Douglas-fir sawlogs on towable waters in western Oregon and western Washington average about \$67 per thousand board-feet while grade 3 sawlogs average about \$45 per thousand board-feet. To an increasing degree, the finest quality Douglas-fir logs are moving into veneer plants, and most of the better logs are no longer available to sawmills.

Sawlog price data generally inadequate

As with stumpage, current price information on sales of sawlogs is fragmentary. Current prices, based upon standard grading rules applied by scaling bureaus, are pub-

³ The price data in this chart are plotted on a logarithmic scale. This is a convenient device for showing comparative rates of change in prices, because equal vertical distances denote equal percentage change.

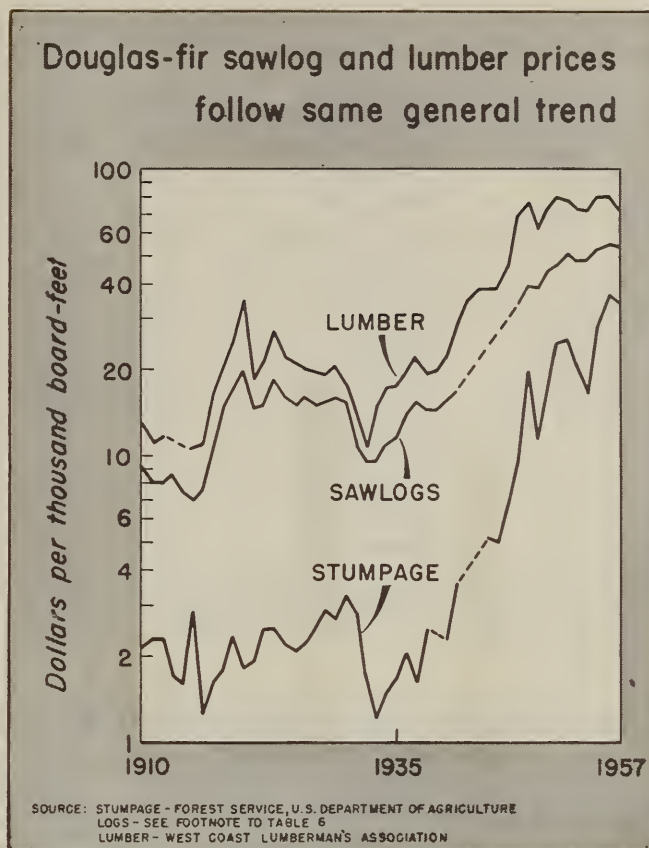


Figure 13

lished in trade publications for the western Washington and western Oregon area (6, 17). In other parts of the West and in the East, local grading rules of varying complexity and accuracy are in use. At the present time in these areas, sawlog price data based on local scales and grading systems are published by several States (4, 5, 9, 10, 13, 14, 22, 26). In general, the prices in these reports consist of mill-spot quotations without specifying grade, log rule, or other value factors.

Illustrative sawlog prices for various species, taken from the State reports issued in 1957, are shown in the following tabulation:

Species:	State and source	Price of sawlogs per thousand bd.-ft.
Ponderosa and sugar pine	California (22) (Sierra region)	¹ \$34.49
Ponderosa pine	NE Washington (14)	30.00 - 45.00
Douglas-fir	California (22) (Sierra region)	¹ 31.19
Douglas-fir	Oregon (10) (Central Willamette Valley)	² 45.00
Southern pine	Louisiana (5)	52.20
Gums	Louisiana (5)	36.65
White oak	Illinois (4)	20.00 - 100.00
Hard maple	Wisconsin (26)	65.00 - 100.00
Yellow birch	Wisconsin (26)	75.00 - 170.00
Southern pine	North Carolina (9) (Coastal Plain)	³ 50.00 - 55.00
Yellow-poplar	North Carolina (9) (Coastal Plain)	20.00 - 50.00
Pine	Vermont (25) (Northwestern)	⁴ 47.00

¹ Average price of second-growth sawlogs delivered to mills.

² Camp run second-growth Douglas-fir sawlogs.

³ Doyle rule.

⁴ Woods run.

THE DEMAND AND PRICE OUTLOOK FOR PULPWOOD

Pulpwood production near peak

Pulpwood production in the United States during 1957 is estimated at 34 million cords, including about 3.5 million cords of residues (fig. 14, app. table 7). This is about 3 percent less than production in 1956, but 10 percent above the 30.9 million cords produced in 1955.

Imports of pulpwood from Canada in 1957 are estimated at 1.6 million cords and additions to stocks during the year 0.6 million cords. Pulpwood consumption in 1957 will thus amount to about 35 million cords, or 2 percent below the peak of 35.8 million cords consumed in 1956. In addition, it is anticipated that the equivalent of 9 million cords of pulpwood will be imported in the form of wood pulp, newsprint, and other paper and paperboard.

The present decline in pulpwood production marks what is believed to be a temporary reversal in the trend that has been almost steadily upward. Since 1900, in response to the development of new uses for pulp and paper products and the continued growth of population and gross national product, pulpwood production in the United States increased from 1.6 million cords to a peak of 35.2 million cords in 1956.

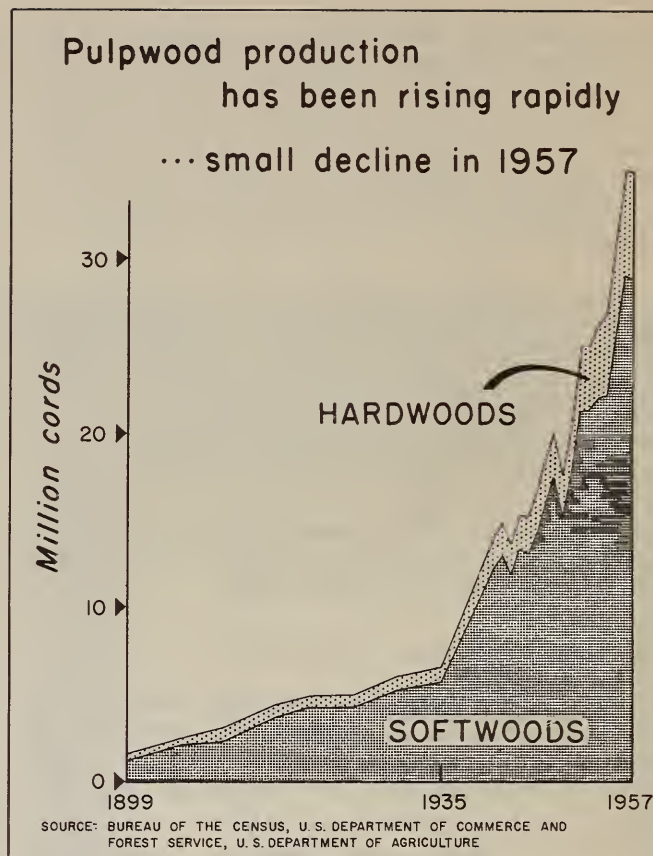


Figure 14

Softwoods preferred for pulpwood

Softwoods, chiefly southern pine, western hemlock, Douglas-fir, spruce, and true firs, are expected to make up about 83 percent of the pulpwood produced in 1957. In the South, softwoods comprise about 86 percent of the total cut, in the North 56 percent, and in the West almost 100 percent of the total. Softwoods are preferred over hardwoods for many grades of paper and board because of longer fibre lengths and greater strength for pulp and paper.

Although the proportion of hardwood pulpwood to softwood pulpwood has not changed appreciably for many years, hardwood pulpwood production has climbed from about 0.8 million cords in 1920 to an estimated 5.8 million cords in 1957. The production of hardwoods--chiefly aspen and gums--has been expanding primarily as a result of increased competition for wood, higher prices for softwood timber, and the development of suitable pulping processes. This has been particularly true in the North where the stands of preferred spruce and

fir have not been adequate to meet the needs of the pulp industry and where large supplies of relatively low-cost aspen and other hardwoods are available.

Pulpwood production concentrated in the South

It is estimated that about 58 percent of the pulpwood produced in the United States in 1957 will be cut from forests in the South (fig. 15). Pulpwood production in this

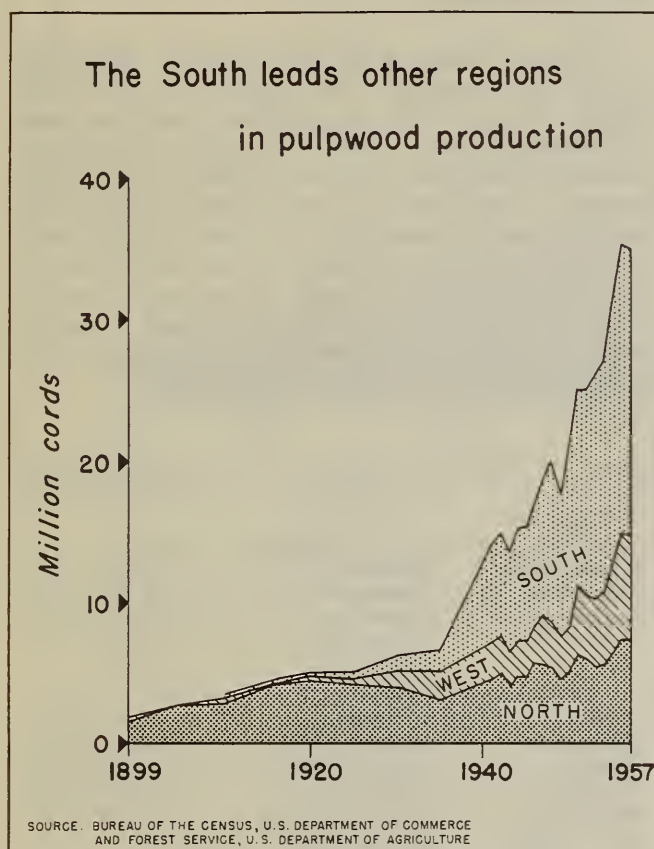


Figure 15

region has been increasing rapidly, rising from about 1 million cords in 1930 to the estimated 19.6 million cords in 1957. The present cut of pulpwood in the South is equivalent to about 80 percent of the volume of sawlogs produced in that region.

The rapid growth of the pulp and paper industry in the South is based upon a number of favorable factors. These include good location with respect to markets; reasonable security of supplies of future raw material, based upon rapid tree growth; local supplies of labor and yearlong woods

work; comparatively easy logging conditions; availability of water, chemicals, and power, and excellent transportation facilities for both pulpwood and finished products.

As a result of the rapid expansion in this region, considerable competition has developed in many areas between pulp mills and sawmills for the available supply of softwood timber. To an increasing extent, the same size and species of timber are used for sawlogs and pulpwood. Yet further expansion of the southern pulp industry is to be expected because of such factors as strong bargaining power for available wood supplies and the ability to use small-size and low-grade material. Some future expansion will probably be based upon the large quantities of plant residues that are available for pulp manufacture.

In the West, new plants have been built and the capacity of old plants increased to such an extent that pulpwood production rose from about 1.2 million cords in 1930 to an estimated 7.4 million cords in 1957. The use of plant residues for pulping is particularly important in this region; currently, more than one-third of the wood used in pulping consists of residues from saw and veneer mills. Although the proportion of residues used in pulping has been steadily increasing, further expansion is expected in view of the large quantities of waste material still unutilized.

Fifty years ago the North supplied nearly all of the pulpwood produced in the United States, and as late as the early 1930's supplied more than half of the Nation's cut. Since the 1930's, production in this region has been rising slowly, reflecting in part the shortages of preferred softwoods. However, in recent years, the production of semichemical and other pulps based on hardwoods has increased substantially, and further expansion can be expected because of the large hardwood resources in this area.

Pulpwood prices at a peak

Pulpwood prices at local points of delivery are now at a peak, although not much change has occurred since 1956 (fig. 16, app. table 8). In the Southeast, for example, the price

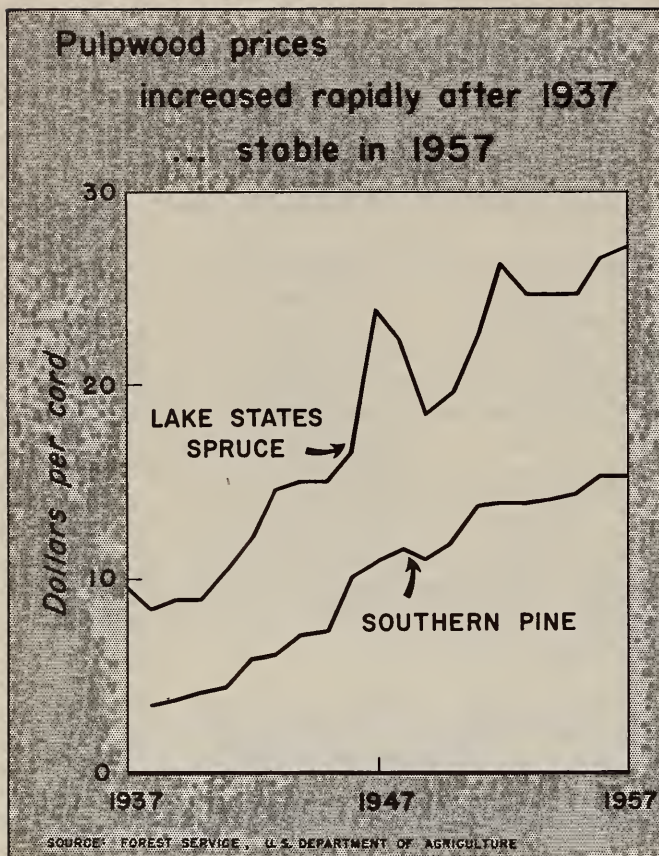


Figure 16

of rough pine pulpwood at local points of delivery currently amounts to \$15.30 per cord. This is approximately the price received in 1956, but reflects a modest increase over the \$14.40 per cord paid in 1955.

Since 1940 pulpwood prices have increased substantially. Prices for spruce in the Lake States have increased from \$9 to \$27.25 per cord. Southern pine pulpwood prices in the Southeastern States have showed an even more rapid increase, rising from \$4.20 in 1940 to \$15.30 per cord in 1957. The trend in the adjusted prices of pulpwood for both spruce and southern pine derived by dividing actual prices by the wholesale price index of all commodities was about the same as the unadjusted price trend.

The rise in pulpwood prices in recent years reflects in part a rapid growth in demand for wood resulting from expansion of the pulp and paper industry. In some areas, however, the increasing scarcity of preferred species, such as spruce and fir, have contributed to the price rise.

Pulpwood prices show considerable variation between regions, depending upon species, availability of local timber supplies, and other factors. Thus, in the Lake States prices of rough pulpwood f.o.b. cars currently average about \$27 per cord for spruce, \$17 for pine and \$12 for aspen and northern hardwood. In the Northeast, prices f.o.b. car average about \$20 per rough cord for spruce and fir and \$14.50 for white pine. In the South the prices per rough cord f.o.b. car average about \$15 for pine and \$12.50 for hardwoods.

Several States publish reports containing price information for pulpwood at local points of delivery. In general, since one unit of measure (the cord) is more or less in standard use and prices are usually at local points of delivery, these price reports are fairly representative of the prices received for pulpwood and are a good indicator of current prices paid. Illustrative pulpwood prices taken from the State reports issued in 1957 for various pulpwood species are shown in the tabulation below:

Species:	State and source	Price of rough pulpwood per cord
White fir and hemlock	N. E. Washington (14)	\$ 12.00
Southern pine	Louisiana (5)	14.50
Hardwoods	Louisiana (5)	12.20
Spruce and fir	Vermont (25)	17.00
Aspen	(Northwestern) Vermont (25)	10.00
Aspen	Wisconsin (26)	11.00 - 15.00
Balsam fir	Wisconsin (26)	21.00 - 23.50
Spruce	Wisconsin (26)	26.00 - 28.50
Hemlock	Wisconsin (26)	18.00 - 19.50
Southern pine	North Carolina (9)	13.50 - 14.75
Hardwoods	(Coastal Plain) North Carolina (9)	13.00
	(Coastal Plain)	

THE DEMAND AND PRICE OUTLOOK FOR VENEER LOGS

Veneer log production declines in 1957

The volume of veneer logs produced in the United States in 1957 is estimated at 3.5 billion board-feet, including 2.5 billion board-feet of softwoods and 1 billion board-feet of hardwoods (fig. 17). Total production in 1957 is about 5 percent less than production in 1956 when a peak of 3.7 billion board-feet of veneer logs was produced.

**Production of veneer logs,
largely softwoods,
shows some decline in 1957**

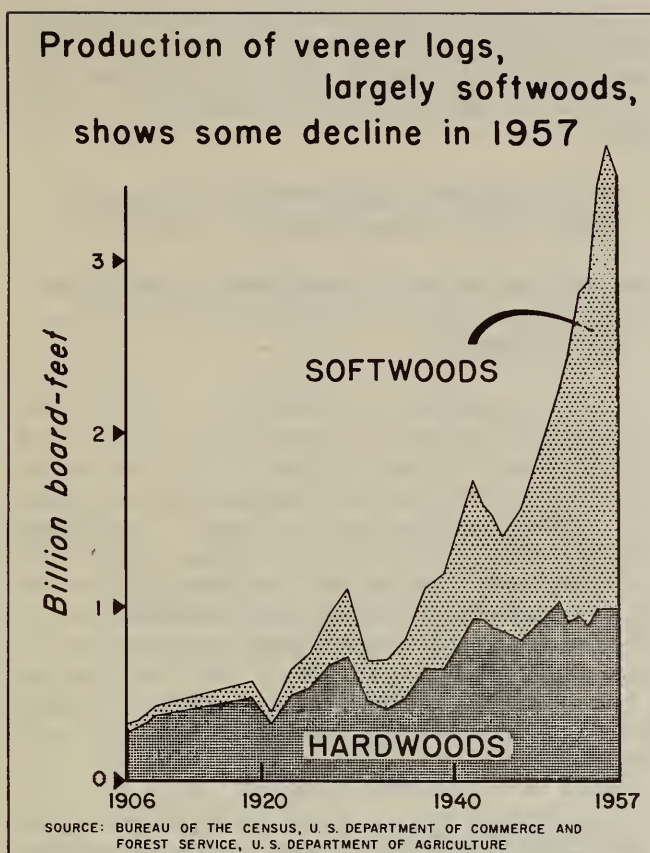


Figure 17

The decline in production in 1957 primarily reflects the decrease in the demand for softwood plywood resulting from the drop in residential construction.

The softwood veneer and plywood industry embraces about 120 mills located in the Pacific Northwest and California. Production has been based chiefly on Douglas-fir which has represented from 95 to 98 percent of the wood consumed. The hardwood veneer and plywood industry, on the other hand, embraces about 500 mills located in the East and depends upon gum, birch, yellow-poplar, and a wide variety of other hardwood species for raw material.

The volume of softwood logs produced in the United States increased slowly between 1900 and the late 1930's. After 1937, however, production climbed rapidly from 460 million board-feet in that year to the 1956 peak of 2.7 billion board-feet. The rapid increase in production of softwood veneer logs in recent years can be attributed to expanding uses for softwood plywood. Substitution of softwood plywood for lumber, particularly in sheathing and subflooring,

has advanced rapidly. Part of the increase in the use of softwood plywood, however, must be attributed to the development of moisture resistant and waterproof glues that permit the manufacture of exterior grades of plywood for use in exposed locations without risk of glue failure.

The increase in the production of hardwood veneer logs was fairly steady from 1906 to 1942. Since 1942 there has been little change in the volume of domestic veneer logs produced, although the demand for hardwood plywood has continued to increase. Such increases have been met by imports of hardwood plywood and veneer, primarily from Japan and Canada respectively.

Veneer log prices near record level

Currently, the price of Douglas-fir veneer logs in western Oregon and western Washington ranges from an average of \$82 per thousand board-feet for number 3 peelers to an average of \$110 for number 1 peelers (fig. 18, app. table 6). These current prices

**Douglas-fir peeler log prices
near record high**

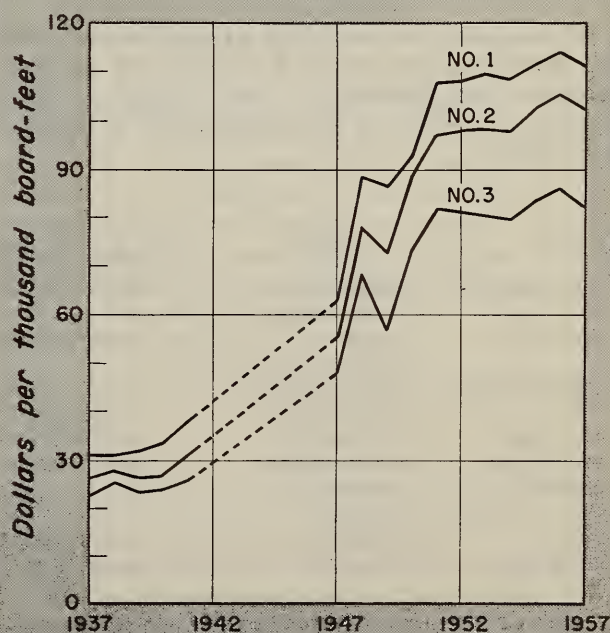


Figure 18

are somewhat below the levels attained in 1956, the previous peak year, but are substantially higher than the prices received in 1940. Between 1940 and 1957, the average price of number 1 peeler logs increased from \$34 to \$110 per thousand board-feet.

The large price increase for Douglas-fir veneer logs since 1940 reflects in part the spectacular growth of the softwood plywood industry and the consequent increased demands for high-grade logs. Rising log production costs and a gradual decline in the availability of high-quality old growth timber have contributed to the price rise. As a result of price increases and technological improvements in the manufacture of plywood, more and more lower grade softwood logs are being utilized.

Prices for hardwood veneer logs are also at or near an alltime peak in 1957, although they show wide ranges in value. High-grade logs suitable for face veneer, used in furniture and paneling, are relatively scarce and bring comparatively higher prices. Black walnut veneer logs, for example, are being quoted from \$50 to \$375 per thousand board-feet in Illinois (4). Veneer logs of species and grade used in the manufacture of veneer for baskets, berry boxes, and other containers are being quoted at lower prices.

Illustrative veneer log prices taken from the State reports issued in 1957 for various species and grades of veneer logs at local points of delivery are shown in the tabulation below:

Species:	State and source	Price of veneer logs per thousand bd.-ft.
Ponderosa pine	California (22) (Sierra region)	\$65.00 - 105.00
Douglas-fir	Oregon (10) (Corvallis area)	68.00 - 105.00
Yellow-poplar	North Carolina (9) (Coastal Plain)	35.00 - 130.00
Hard maple	Wisconsin (26)	85.00 - 120.00
Yellow birch	Wisconsin (26)	140.00 - 225.00
Basswood	Vermont (25) (Eastern)	20.00 - 100.00
Walnut	Illinois (4)	50.00 - 375.00
White oak	Illinois (4)	40.00 - 200.00

The above price quotations must be considered as only roughly indicative of values of veneer logs in any particular log market. As in the case of sawlogs, excepting the log

markets of western Washington and western Oregon, there is little information available on actual transaction prices for veneer logs in terms of standard grades and volume units.

THE DEMAND AND PRICE OUTLOOK FOR OTHER ROUNDWOOD PRODUCTS

Production of other industrial roundwood products shows variable trends--prices vary widely

The production of industrial roundwood products such as cooperage logs, poles and piling, fence posts, hewn ties, round mine timbers, and a miscellaneous assortment of other products (fuelwood excluded) amounted to about 700 million cubic feet in 1952 and accounted for about 8 percent of the industrial roundwood produced in the United States. Production of individual products has shown variable trends in recent years, but in total there has probably been no significant change in the amount of wood produced.

Cooperage logs.--There has been a general trend away from the use of cooperage in the United States. Between 1906 and 1952, the latest year for which data are available, the volume of timber used in the production of cooperage declined from 1.5 billion board-feet to about 355 million board-feet.

Cooperage bolts for tight cooperage still constitute a relatively high-value product. White oak stave bolts in Illinois are quoted at 85¢ to \$1.35 per chord foot f.o.b. mill (4). Bolts used for slack cooperage are substantially lower in price.

Piling and poles.--In 1952, the latest year for which data are available, about 28 million cubic feet of piling and 6.5 million poles were produced in the United States. This level of production was substantially higher than the average for the period 1925-29 when 21.5 million cubic feet of piling and 3.6 million poles were produced. The upward trend in production of piling reflects increased levels of construction. The increase in the production of poles reflects the great mileage of new power lines that have been installed during recent years, particularly in the Rural Electrification Program.

Pole and piling prices vary considerably according to length, diameter, and other quality factors. Illustrative prices at local points of delivery, taken from State reports published in 1957, are shown in the tabulation below:

Species:	State and source	Price per pole
Southern pine	North Carolina (9) (Coastal Plain)	30 ft.= \$ 1.80 - 4.50
		50 ft.= 11.00 - 17.50
		70 ft.= 31.00 - 42.00
Cedar	Wisconsin (26)	30 ft.= 4.50 - 5.00
Southern pine	Louisiana (5)	30 ft.= 2.75 - 3.60
		50 ft.= 15.35 - 18.60
		70 ft.= 45.00 - 60.10

Posts.--Between 1920 and 1952, the production of wood posts declined from an annual total of about 900 million to an estimated 300 million posts. This decline resulted partly from greater use of steel and concrete posts and partly from increased use of wood preservatives. Farm abandonment or consolidation and the decline in the use of horses on farms have also tended to reduce post use. The influence of such factors, however, is being partially offset by trends toward more intensive pasture management and rangeland improvements.

Fence posts vary considerably in price according to species, size, local availability, and other factors. Prices range between 15¢ and 70¢ a post at local points of delivery.

Wood for charcoal.--The production of wood for charcoal manufacture amounted to about 574 thousand cords in 1956, including 149 thousand cords of residues (28). As indicated by data on charcoal produced, this was slightly above the previous postwar peak reached in 1952, and moderately above production in other postwar years for which data are available.

Production in 1956 was considerably below the level prevailing in the early 1900's. Most of the decline occurred between 1909 and 1939, a period when charcoal production decreased from 555 thousand tons to 251 thousand tons. This decline in production was brought about primarily by the substitution of other materials for charcoal in the manufacture of metals and chemicals and the loss of heating and cooking markets in large cities.

In 1956 the price of roundwood delivered at charcoal plants ranged between a low of \$6.90 per cord in the Central States to a high of \$12.70 per cord in the Lake States, and averaged \$11.70 in the Nation. The price of residues was lower, averaging \$8.75 for the country.

Miscellaneous roundwood timber products.--In 1952, an estimated 315 million cubic feet of timber was produced for hewn ties, mine timbers, box bolts, excelsior bolts, turnery bolts, shingle bolts, smelter poles, farm poles, and similar items. Past trends in the production of these products have been variable--some increasing and others decreasing. In total, however, there has probably not been much change in the level of production in recent years.

Scattered price information is available for a number of these miscellaneous industrial products in regions where their production is important. Box and excelsior bolts in Wisconsin in the second quarter of 1957 were quoted at \$12 to \$22 per cord f.o.b. mill, with prices depending partly on species (26). Excelsior bolts in New Hampshire in 1956 were quoted at \$15 to \$18 per rough cord (24). Turnery bolts in the same State were quoted at from \$20 to \$70 per cord in 1955. Prices for redwood shingle and shake bolts in California currently range from \$22.50 to \$35 per cord f.o.b. mill (22).

The quotations above indicate the scattered nature of price data for other industrial roundwood products. Available prices for these products are usually expressed as a range of prices without indications of quality or measurement practice. Actual sales prices for particular sales may therefore differ materially from quoted prices depending upon buying practices and market locations.

Production of fuelwood has been declining rapidly

As a result of a greater use of more convenient and more efficient fuels, such as coal, oil, gas and electricity, the consumption of fuelwood has been declining rapidly, and present production is probably less than one-quarter the volume produced in 1900. Moreover, fuelwood is rapidly becoming a byproduct of timber cut for

industrial wood products. In 1952, an estimated 58.6 million cords of wood was used for fuel. Of this total, some 31.4 million cords or 54 percent was taken from plant residues. Of the 27.2 million cords cut directly from trees, 14.1 million cords came from dead and cull trees and trees on noncommercial forest land and only 13.1 million cords from forest growing stock.

Despite the decline in the consumption of fuelwood, there is still a fairly good market for this product in or near most cities, primarily for use in fireplaces. Prices received for fuelwood at local points of delivery generally range between \$10 and \$20 per cord.

Consumption of Christmas trees increasing

The use of Christmas trees in the United States is rising, and it is estimated that consumption in 1957 will be in excess of 40 million trees, including about 27 million produced in domestic forests and 13 million imported from Canada. Prices paid to timber growers for Christmas trees vary widely. In California, for example, prices paid on the stump ranged from 10¢ to 35¢ in 1956 (21). During the same year, plantation-grown Christmas trees in Pennsylvania were reported to have sold for prices generally ranging from \$1.50 to \$4 per tree delivered at roadside (12).

THE LONG-TERM OUTLOOK FOR TIMBER PRODUCTS

The U. S. Forest Service has recently analyzed the future prospects for timber markets in the light of expected trends in the growth of population, gross national product, and other related factors (27). It is estimated that the Nation's population, for example, will increase from about 157 million people in 1952 to 210 million in 1975, and to 275 million in the year 2000 (fig. 19). Gross national product, a more significant market indicator for industrial raw materials is expected to rise from a 1952 level of about \$365 billion to \$630 billion in 1975 and \$1,200 billion in 2000. Other estimates indicate that by 1975, population and gross national product may be considerably above these estimates.

Projections of potential demand, outlined in detail in the Timber Resource Review

report, indicate that by 1975 demand for industrial timber products (excluding fuelwood) may be 25 to 40 percent above 1952. With higher estimates of population and gross national product, potential timber demands would be still higher.

The Timber Resource Review report further indicates that with such increased demands for timber, a tightening timber supply situation is in prospect. Assuming that progress in forest management will continue as indicated by recent trends--and this means substantial progress--timber supplies would be sufficient to meet demands under the lower projection in the years immediately ahead. Within a few decades, however, projected growth would not be sufficient to meet all timber demands, particularly for the preferred softwood species such as southern pine and Douglas-fir and for quality timber. With present forestry efforts the upper projection of potential demand could not be supplied for long without dipping heavily into forest capital.

These projections of potential demand and prospective growth thus point to future supply problems and increased timber values, particularly for the preferred softwoods and high-quality timber. This means problems of raw material supply for many forest industries and pressure for such adjustments as greater use of hardwood in lieu of softwoods. From the standpoint of forest landowners, this also suggests better market opportunities for timber and a greater stimulus for forestry than in the past. From the standpoint of forest industry and the public, this appraisal of the future emphasizes the need for a major strengthening of forestry efforts in the United States.

THE DEMAND AND PRICE OUTLOOK FOR NAVAL STORES

Lower output expected in 1957

Production of about 1,960 thousand drums of rosin and 630 thousand barrels of turpentine is expected in the 1957 crop year. Output of gum and steam-distilled wood rosin is expected to decline by about 100 thousand drums while tall oil rosin production increases by about 65 thousand drums. Similarly, in the case of turpentine,

Population, Gross National Product, and Demand for Timber Products* with Projections to 1975

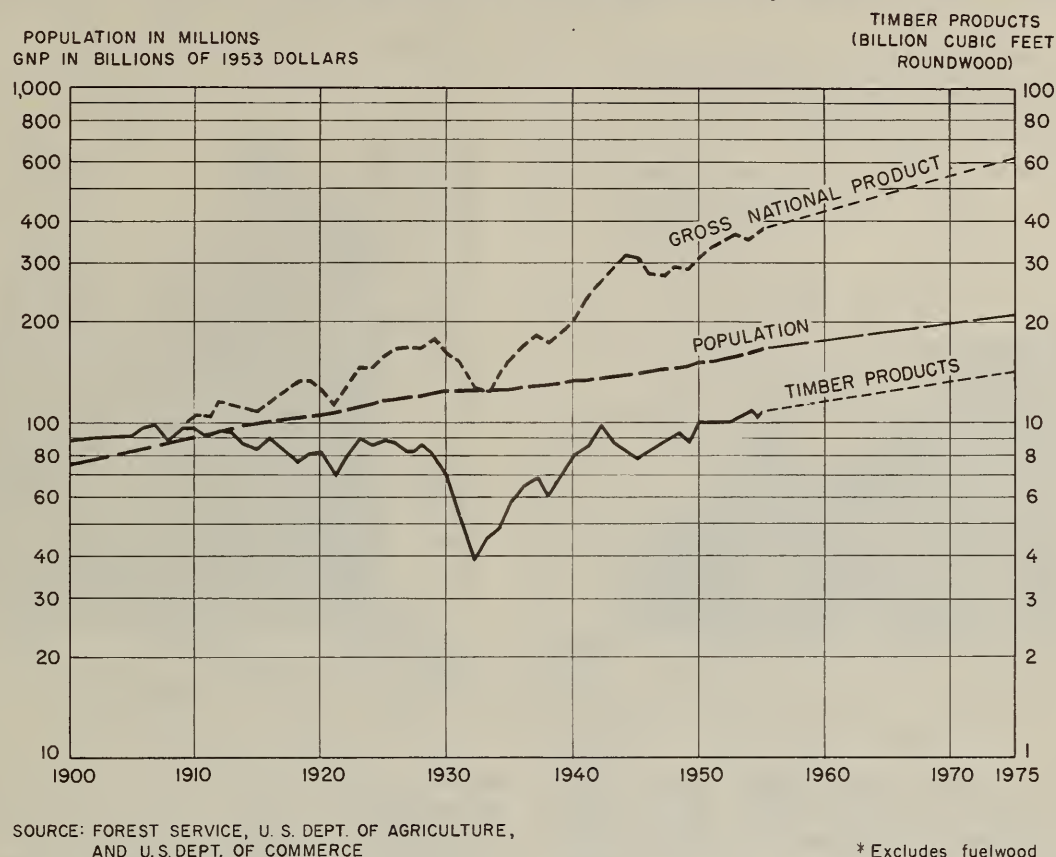


Figure 19

an expected 5 thousand-barrel increase in sulfate turpentine production will be insufficient to offset an anticipated 20 thousand-barrel reduction in the output of gum and steam-distilled wood turpentine (app. tables 9 and 10).

Long-term shift in output sources likely to continue

Over the past 30 years rosin production has shown a slight upward trend while changes in turpentine production have been inconclusive. The spectacular changes have been in output sources rather than overall volume (fig. 20 and 21). Forty years ago, crude pine gum, collected from living longleaf and slash pines, was virtually the only source of naval stores. Today, rosin and turpentine derived from first-growth stumpwood through solvent extraction and as an accompaniment to the kraft paper-

making process constitute about three-fourths of total output. Gum naval stores production today is less than half the size of the 1949 crop and only one-fourth as large as output in 1930.

During the past 10 years, significant increases have been achieved in gum output per tree and per man-hour (at the same time developing practices for preserving the full value of the tree as future pulp or lumber). Nevertheless, the gum crop has continued to decline partly because paper manufacturers generally have purchased or leased gum-producing pine tracts to grow pulpwood at the maximum rate. Gum output is expected to continue at or slightly below current levels for the next few years. Thereafter, the downward trend may be reversed through application by gum farmers of the results of

Rosin production shifts from gum to wood and tall oil

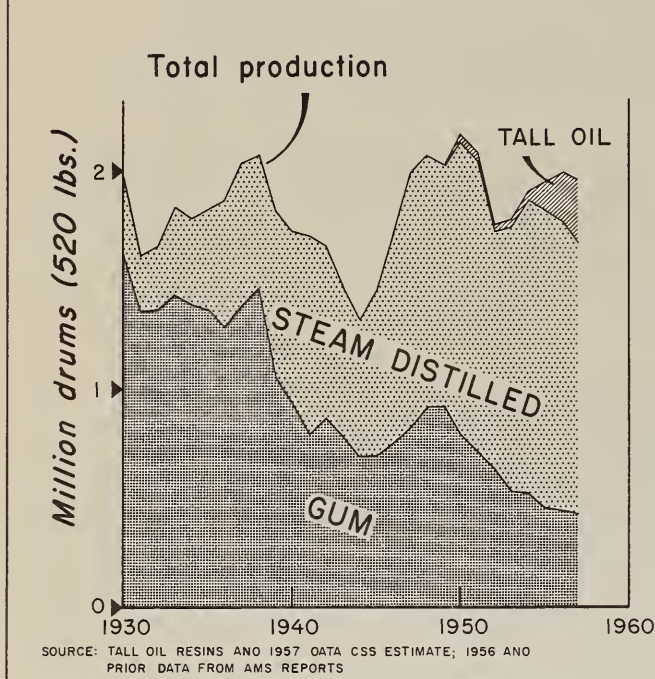


Figure 20

continuing research on greater gum yields and lower labor requirements and by the newly developed tendency of pulp mills to permit gum farming as part of an integrated forestry operation.

Production of steam-distilled rosin and turpentine reached its peak in 1955 and this year will decline for the second consecutive year. Steam-distilled wood naval stores is based on a dwindling supply of first-growth pine stumps, and the long-term outlook is for a gradual decline in output which should offset fully the anticipated increase in tall oil rosin production and, to a lesser extent, the increased production of sulfate wood turpentine.

Increased rosin stocks in prospect

Rosin stocks are likely to be higher at the beginning of the next season with the bulk of the increase occurring in CCC holdings. It is expected that between 50 and 70 thousand drums of rosin (12 to 18 percent of the crop) will be placed in the 1957 loan. Most of the pale grades and, perhaps,

Expanding sulfate turpentine production now comprises half total domestic output

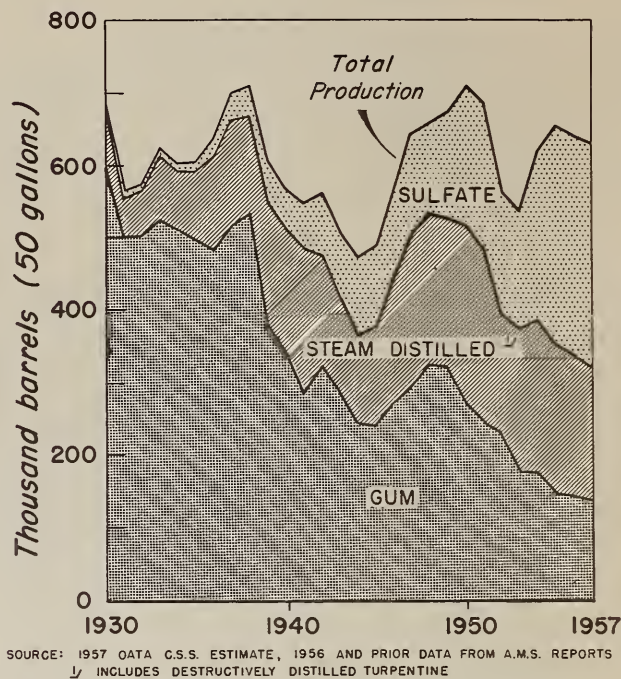


Figure 21

some of the lower grades, probably will be redeemed before next July 1. Overall turpentine stocks may be slightly higher next April 1, although no increase is expected in gum turpentine stocks. Pledges to the 1957 loan program are likely to be negligible and should be redeemed this winter. The main change in stocks since the 1930's has been, not in the overall volume, but rather in the tendency to shift responsibility for them to CCC.

Domestic consumption slightly lower in 1957

Slight decreases are likely in domestic consumption of rosin and turpentine during the 1957 crop year. However, the long-term outlook is toward maintenance and ultimate increase in the high consumption level of the past several years.

The lower rosin consumption expected this year reflects in part the temporary interruption in the upward trend of paper and board production and in the output of S-type synthetic rubber. Production of kraft

paper and S-type rubber is down 8 and 4 percent, respectively, January through July 1957, as compared with the same period in 1956. Paper size, the largest single rosin outlet for 30 years, currently accounts for more than one-third of the domestic disappearance of rosin. In the future, it is likely to claim an even greater share of the rosin market. Rosin also is consumed extensively in the production of various chemicals and pharmaceuticals, protective coatings, and as an emulsifying agent in the production of S-type rubber. The shift from the direct marketing of rosin as such to the marketing of modified or specialty rosins is expected to continue.

The slight reduction expected in turpentine consumption is due to the continued decline in requirements for on-the-job thinning of oil base paints because of inroads made by water based paints and competitive paint thinners. Sales in small containers to individual householders have been an important outlet for turpentine since the early 1920's when paint manufacturers shifted from turpentine to cheaper competitive solvents. In 1932, only 17 percent of domestic disappearance represented industrial consumption. In the past 20 years, however, there has been a shift back to industrial use of turpentine (fig. 22). The proportion of turpentine so used in 1956 approximated 60 percent of domestic disappearance and is expected to increase. Sales in small containers are more or less the forte of gum turpentine and, to a lesser extent, steam-distilled wood turpentine. On the other hand, it is mainly the lower priced sulfate wood turpentine that is used industrially.

The principal industrial uses for turpentine follow:

1. Synthetic pine oil. This market shows promise of continued growth as production of natural pine oil, tied to solvent extracted naval stores, declines.

2. Insecticides (chlorinated hydrocarbons). This highly important industrial outlet for turpentine currently may be threatened by the reported development of insect resistance in some areas.

3. Beta pinene. The production and utilization of beta pinene in synthetic resins is

limited only by the output of crude sulfate turpentine. The future of this market seems assured indefinitely.

4. Synthetic camphor. This is a declining market.

5. Oil additives. Much of this market was lost to competing products following World War II when turpentine prices rose to \$1.50 per gallon. Several products now in the development stage are expected to offset the faltering oil additive and synthetic camphor markets.

Lower exports likely in 1957

Although exports of rosin, April through July 1957, are substantially higher than a year ago, the total for the crop year ending March 31, 1958, is likely to be lower. Turpentine exports also are expected to be less than last year. Foreign production outside the Communist Bloc countries is expected to surpass output of a year ago by about 130 thousand drums of rosin and 45 thousand barrels of turpentine. The change in actual export availabilities from these countries, however, is less striking than in production, particularly as concerns turpentine. Foreign turpentine stocks on January 1, 1957, were about 35 thousand barrels less than a year earlier. Over the same period, rosin stocks declined slightly. However, it is probable that foreign producing countries this year will strive to minimize carryovers.

Developments that may improve export situation

Two factors may tend to brighten prospects for United States naval stores in 1957-58. First, there is evidence this year of substantially reduced exports of Chinese rosin as compared with a year ago. Considered together with substantial shipments of Greek, French, and Portuguese rosins to the Iron Curtain area, this may indicate either lower production or increased consumption in Communist Bloc countries. The importance of such a development may be gaged by the fact that during 1956, about 135 thousand drums of rosin and 48 thousand barrels of turpentine (approximately the above-mentioned increase this year in non-Communist foreign production) were exported to areas outside the Iron Curtain by China, Russia, and Poland.

Secondly, a substantial part of the Spanish surplus of about 70 thousand drums of rosin and 12 thousand barrels of turpentine may not move unless the Spanish government grants an export bonus or a special exchange rate for naval stores exporters. As of September, the Spanish government was reported disinclined so to act. At present, high-cost Spanish rosin is not competitive, pricewise, with rosin originating elsewhere.

Exports less important but becoming stabilized

The relative importance of the export outlet for United States rosin and turpentine has been declining since the decade before World War II when rosin and turpentine exports averaged about 900 thousand drums and 250 thousand barrels, respectively. This export volume accounted for 50 percent of the rosin crop and 40 percent of turpentine production (fig. 22 and 23). However, since the end of World War II, exports appear to have stabilized at about 500 to 600

thousand drums of rosin (25 to 30 percent of output) and 80 to 120 thousand barrels of turpentine (15 to 20 percent of production). Even if foreign output were to expand (as appears to be probable in China, South Africa, India, Indonesia, Greece, and Mexico), the growing naval stores requirements of a world striving toward industrialization should tend, in the long run, to maintain United States exports at about present levels.

Prices of turpentine and pale rosins expected to rise

Turpentine and high-grade rosin prices are expected to rise before the new gum crop arrives next April 1. Not much change is expected in medium-grade rosins that at present are close to loan value. Through August of this crop year, rosin and turpentine prices have averaged 4 percent less and 1 percent more, respectively, than a year ago (8).

Turpentine industrial consumption rises as exports and, more recently, small container retail sales decline

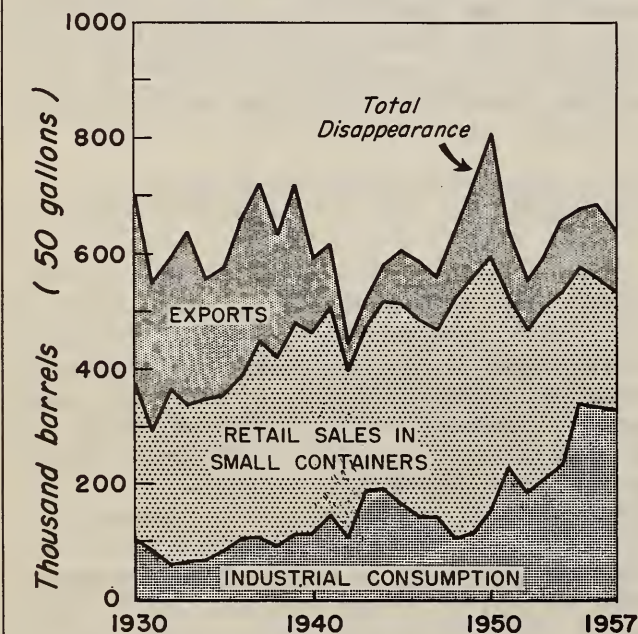


Figure 22

Rosin utilization depends increasingly on domestic consumption as export volume declines

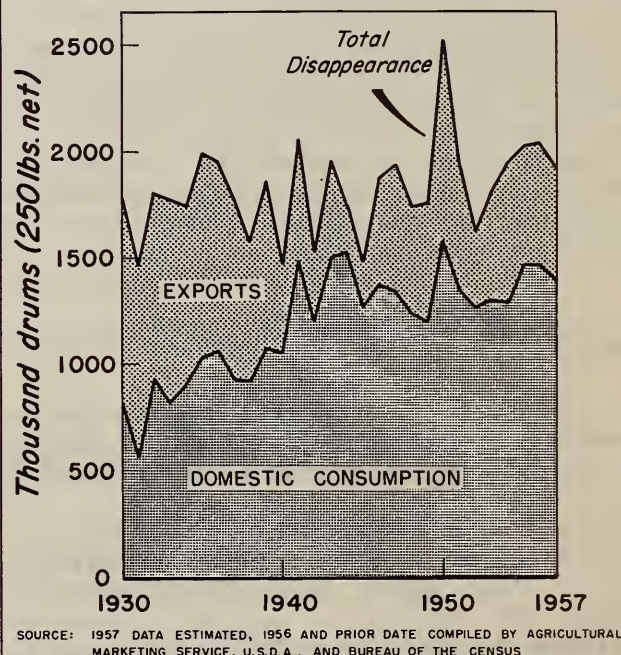


Figure 23

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APPENDIX

TABLE 1.--Estimated production of timber products from roundwood in the United States, 1900-1957
(Million cubic feet)

Year	Lumber	Pulpwood	Veneer logs	Other roundwood products ¹	Total	Year	Lumber	Pulpwood	Veneer logs	Other roundwood products ¹	Total
1900.....	5,680	140	10	1,460	7,290	1930	4,560	470	150	1,200	6,380
1901.....	5,930	150	10	1,490	7,580	1931	3,110	460	120	970	4,660
1902.....	6,180	160	10	1,530	7,880	1932	2,100	380	120	830	3,430
1903.....	6,450	180	10	1,580	8,220	1933	2,660	460	120	840	4,080
1904.....	6,680	190	20	1,600	8,490	1934	2,920	460	130	860	4,370
1905.....	6,750	200	30	1,640	8,620	1935	3,560	510	140	900	5,110
1906.....	7,140	230	60	1,800	9,230	1936	4,290	580	170	980	6,020
1907.....	7,140	240	60	2,110	9,550	1937	4,510	680	200	1,020	6,410
1908.....	6,520	210	70	1,930	8,730	1938	3,860	610	200	920	5,590
1909.....	6,910	250	80	2,050	9,290	1939	4,470	750	210	960	6,390
1910.....	6,910	240	90	2,080	9,320	1940	4,840	950	230	970	6,990
1911.....	6,680	260	80	2,020	9,040	1941	5,680	1,090	260	1,030	8,060
1912.....	6,990	270	80	2,020	9,360	1942	5,650	1,140	300	1,000	8,090
1913.....	6,830	280	80	2,000	9,190	1943	5,330	1,030	280	920	7,560
1914.....	6,290	280	80	1,930	8,580	1944	5,120	1,170	270	900	7,460
1915.....	5,750	310	90	1,880	8,030	1945	4,370	1,150	250	850	6,620
1916.....	6,180	340	90	1,930	8,540	1946	5,300	1,280	250	890	7,720
1917.....	5,570	360	90	1,930	7,950	1947	5,500	1,390	270	940	8,100
1918.....	4,960	350	90	1,920	7,320	1948	5,750	1,490	290	850	8,380
1919.....	5,370	340	110	1,910	7,730	1949	5,000	1,290	320	750	7,360
1920.....	5,440	390	80	1,890	7,800	1950	5,910	1,510	340	820	8,580
1921.....	4,510	290	70	1,720	6,590	1951	5,780	1,840	390	800	8,810
1922.....	5,480	350	90	1,690	7,610	1952	5,820	1,820	420	700	8,760
1923.....	6,370	360	120	1,700	8,550	1953	5,710	1,890	480	820	8,900
1924.....	6,140	360	120	1,650	8,270	1954	5,650	1,930	480	800	8,860
1925.....	6,370	390	130	1,500	8,390	1955 ²	6,030	2,220	580	840	9,670
1926.....	6,180	420	140	1,490	8,230	1956 ²	5,850	2,440	610	790	9,690
1927.....	5,790	430	170	1,440	7,830	1957 ²	5,410	2,420	590	780	9,200
1928.....	5,710	440	180	1,390	7,720						
1929.....	6,020	490	200	1,380	8,090						

¹ Excludes fuelwood² Preliminary. Subject to revision

Source: Based on data published by the Departments of Commerce and Agriculture and estimates of the Forest Service.

TABLE 2.--Stumpage prices for selected species, 1910-57

(Dollars per thousand board-feet)

Year	Douglas-fir ¹		Southern pine ²		Sugar pine ³		Ponderosa pine ³	
	Current dollars	1947-49 ⁴ dollars	Current dollars	1947-49 ⁴ dollars	Current dollars	1947-49 ⁴ dollars	Current dollars	1947-49 ⁴ dollars
1910.....	2.20	4.80	1.50	3.30	4.30	9.40	3.60	7.90
1911.....	2.30	5.50	2.80	6.60	2.50	5.90	2.50	5.90
1912.....	2.30	5.10	1.50	3.30	3.50	7.80	2.70	6.00
1913.....	1.70	3.70	1.70	3.70	3.30	7.30	2.20	4.80
1914.....	1.60	3.60	2.90	6.50	3.00	6.80	2.00	4.50
1915.....	2.90	6.40	2.10	4.60	3.40	7.50	2.50	5.50
1916.....	1.20	2.20	3.20	5.80	3.50	6.30	2.90	5.20
1917.....	1.60	2.10	3.40	4.50	2.80	3.70	2.20	2.90
1918.....	1.80	2.10	3.00	3.50	3.40	4.00	2.70	3.20
1919.....	2.40	2.70	3.70	4.10	3.40	3.80	3.00	3.30
1920.....	1.80	1.80	4.40	4.40	5.00	5.00	3.70	3.70
1921.....	1.90	3.00	3.70	5.80	4.20	6.60	3.20	5.00
1922.....	2.50	4.00	2.80	4.50	3.80	6.10	4.00	6.40
1923.....	2.50	3.80	3.00	4.60	4.40	6.70	3.90	6.00
1924.....	2.20	3.40	3.50	5.50	4.20	6.60	3.50	5.50
1925.....	2.10	3.10	3.20	4.80	4.40	6.50	3.60	5.30
1926.....	2.20	3.40	3.60	5.50	4.50	6.90	3.70	5.70
1927.....	2.50	4.00	3.50	5.70	4.00	6.40	3.40	5.40
1928.....	2.90	4.60	3.60	5.70	3.20	5.20	2.50	4.00
1929.....	2.70	4.40	3.50	5.60	4.60	7.50	3.60	5.80
1930.....	3.30	5.90	3.20	5.60	6.30	11.30	3.60	6.30
1931.....	2.90	6.20	3.40	7.20	4.60	9.60	4.20	9.00
1932.....	1.70	3.90	2.80	6.70	3.70	8.80	2.60	6.20
1933.....	1.20	2.80	2.70	6.30	--	--	--	--
1934.....	1.50	3.10	2.90	6.00	3.50	7.20	2.50	5.10
1935.....	1.70	3.30	4.50	8.60	3.10	6.00	2.40	4.60
1936.....	2.10	4.00	--	--	2.80	5.30	2.20	4.20
1937.....	1.60	2.90	5.30	9.40	2.80	5.00	2.20	3.90
1938.....	2.50	4.90	7.30	14.30	3.50	6.90	2.50	5.00
1939.....	--	--	5.80	11.50	3.10	6.20	2.40	4.70
1940.....	2.30	4.60	4.50	8.70	3.00	6.00	2.20	4.30
1941.....	3.60	6.30	10.80	19.10	3.40	6.00	2.60	4.60
1942.....	--	--	8.90	13.90	4.80	7.40	2.70	4.20
1943.....	--	--	8.70	13.00	4.20	6.20	5.00	7.40
1944.....	5.20	7.70	10.90	16.20	5.20	7.70	4.00	5.80
1945.....	5.00	7.20	9.30	13.60	7.30	10.60	5.60	8.10
1946.....	6.60	8.40	8.90	11.40	7.20	9.20	5.80	7.30
1947.....	9.90	10.30	10.90	11.30	12.50	13.00	8.30	8.60
1948.....	19.90	19.10	16.40	15.70	16.20	15.50	14.60	14.00
1949.....	11.10	11.20	19.70	19.90	18.90	19.00	17.60	17.70
1950.....	16.40	15.90	26.70	25.90	25.00	24.20	18.30	17.70
1951.....	25.40	22.10	34.60	30.10	40.40	35.20	33.60	29.30
1952.....	25.80	23.10	38.50	34.50	36.40	32.60	27.40	24.60
1953.....	20.20	18.30	34.20	31.10	30.20	27.50	25.90	23.50
1954.....	16.20	14.70	29.70	26.90	31.20	28.30	27.20	24.70
1955.....	28.90	26.10	32.00	28.90	30.00	27.10	26.10	23.60
1956.....	37.70	33.00	37.40	32.70	34.90	30.50	27.20	23.80
1957 ⁵	33.80	28.90	32.30	27.60	34.70	29.70	31.60	27.00

¹ 1910-31 National Forest timber sales, all species Washington and Oregon; 1932-41 all species western Washington and western Oregon; 1944-1957, National Forest and BIM sales, Douglas-fir only in western Washington and western Oregon. All U.S. Forest Service National Forest prices in this table are the bid prices for timber sold on a Scribner C log scale basis, including Knutsen-Vandenberg Act deposits for stand improvement but excluding cooperative deposits and slash-disposal payments.

² 1910-34 stumpage prices of privately owned second-growth southern pine timber, Steer (15); 1935-49 National Forest timber sales all species; 1950-57 National Forest timber sales pine only.

³ 1910-57 National Forest timber sales, California.

⁴ Adjusted on the basis of the wholesale price index of all commodities as reported by the Bureau of Labor Statistics (29).

⁵ 1st quarter 1957.

TABLE 3.--Pulpwood stumpage prices of selected species, 1935-57

(Dollars per standard cord)

Year	Southern pine		Spruce	
	National forest ¹	Private ²	Lake States	
			National forest ¹	Private ³
1935.....	0.70			
1936.....	1.00			
1937.....	.80			3.00
1938.....	.90	0.80		
1939.....	1.00	.90		
1940.....	1.00	1.00		2.00
1941.....	.90	1.10		3.10
1942.....	.80	1.40		3.50
1943.....	.80	1.80		3.80
1944.....	1.00	1.90		4.20
1945.....	.80	2.00	1.40	4.20
1946.....	1.20	2.50	2.50	--
1947.....	1.20	2.80	2.40	4.90
1948.....	1.70	2.80	3.50	8.00
1949.....	1.90	2.90	3.80	6.00
1950.....	2.10	3.30	2.60	5.50
1951.....	3.00	3.50	5.40	7.00
1952.....	3.20	3.80	4.50	7.50
1953.....	3.40	4.00	3.70	7.20
1954.....	3.80	4.20	3.90	6.50
1955.....	4.00	4.50	--	7.50
1956.....	4.95	5.40	4.50	7.50
1957.....	⁴ 4.85	5.30	⁴ 6.10	7.25

¹ Source: Forest Service, U. S. Department of Agriculture.² Estimated by Forest Service, U. S. Department of Agriculture.³ Source: University of Wisconsin Extension Forestry Office (25).⁴ 1st quarter 1957.

TABLE 4.--Lumber production, imports, exports, and consumption in the United States, for selected years 1899-1957

Year	Domestic production	Imports	Exports	Stock changes	Apparent consumption	Per capita consumption
	<i>Billion board-feet</i>	<i>Billion board-feet</i>	<i>Billion board-feet</i>	<i>Billion board-feet</i>	<i>Billion board-feet</i>	<i>Board-feet</i>
1899.....	35.1	0.4	1.4	--	34.1	458
1905.....	43.5	.7	1.8	--	42.4	506
1910.....	44.5	1.1	2.2	--	43.4	470
1915.....	37.0	.9	1.3	--	36.6	364
1920.....	35.0	1.4	1.7	--	34.7	326
1925.....	41.0	1.8	2.6	--	40.2	347
1930.....	29.4	1.2	2.4	--	28.2	229
1931.....	20.0	.7	1.7	--	19.0	153
1932.....	13.5	.4	1.2	--	12.7	102
1933.....	17.2	.4	1.3	--	16.3	130
1934.....	18.8	.3	1.3	--	17.8	141
1935.....	22.9	.4	1.3	-1.3	23.3	183
1936.....	27.6	.7	1.3	1.3	25.7	201
1937.....	29.0	.7	1.4	2.4	25.9	201
1938.....	24.8	.5	1.0	.7	23.6	182
1939.....	28.8	.7	1.1	--	28.4	217
1940.....	31.2	.7	1.0	-3.4	34.3	260
1941.....	36.5	1.4	.7	1.0	36.2	271
1942.....	36.3	1.5	.5	-6.5	43.8	325
1943.....	34.3	.9	.3	-3.9	38.8	284
1944.....	32.9	1.0	.4	-1.1	34.6	250
1945.....	28.1	1.1	.4	-1.8	30.6	219
1946.....	34.1	1.2	.6	1.2	33.5	237
1947.....	35.4	1.3	1.4	1.5	33.8	235
1948.....	37.0	1.9	.6	1.9	36.4	248
1949.....	32.2	1.6	.7	-1.3	34.4	231
1950.....	38.0	3.4	.5	.2	40.7	268
1951.....	37.2	2.5	1.0	.8	37.9	245
1952.....	37.5	2.5	.7	-.3	39.6	252
1953.....	36.7	2.8	.6	.8	38.1	239
1954.....	36.4	3.1	.7	.4	38.4	236
1955 ¹	38.8	3.6	.8	-.4	42.0	254
1956 ¹	37.1	3.4	.8	.6	39.1	232
1957 ¹	34.8	2.7	1.0	.9	35.6	208

¹ Preliminary. Subject to revision.

Source: U. S. Department of Commerce, Bureau of the Census; U. S. Department of Agriculture, Forest Service

TABLE 5.--Estimated lumber production in the United States, by regions and by hardwoods and softwoods, selected years 1899-1957¹

Year	All regions				North			South			West, total ²
	Total	Hardwoods	Softwoods	Total	Total	Hardwoods	Softwoods	Total	Hardwoods	Softwoods	
	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet	Billion board-feet
1899.....	35.1	8.9	26.2	18.6	6.6	12.0	2.3	10.7	3.5	3.5	3.5
1905.....	43.5	10.5	33.0	20.1	7.3	12.8	3.3	13.3	6.9	6.9	6.9
1910.....	44.5	10.5	34.0	15.6	7.5	8.0	2.9	17.1	8.9	8.9	8.9
1915.....	37.0	7.5	29.5	10.0	4.7	5.3	3.5	16.0	8.2	8.2	8.2
1920.....	35.0	7.4	27.6	6.9	3.8	3.0	3.5	12.5	12.1	12.1	12.1
1925.....	41.0	7.7	33.3	6.0	3.6	2.5	4.1	15.5	15.3	15.3	15.3
1930.....	29.4	6.1	23.2	4.5	2.9	1.6	3.2	9.4	12.2	12.2	12.2
1935.....	22.9	4.7	18.2	3.8	2.4	1.5	2.3	7.7	9.1	9.1	9.1
1940.....	31.2	5.5	25.6	4.6	2.9	1.7	2.6	10.7	13.2	13.2	13.2
1941.....	36.5	6.7	29.9	5.3	3.3	2.0	3.3	12.2	15.7	15.7	15.7
1942.....	36.3	6.8	29.5	5.1	3.2	2.0	3.6	12.0	15.6	15.6	15.6
1943.....	34.3	7.4	26.9	4.9	3.2	1.7	4.2	10.2	15.0	15.0	15.0
1944.....	32.9	7.8	25.2	5.4	3.5	1.9	4.3	8.3	12.1	12.1	12.1
1945.....	28.1	7.0	21.1	4.5	2.8	1.7	4.1	7.4	14.4	14.4	14.4
1946.....	34.1	8.3	25.9	4.9	3.1	1.9	5.1	9.6	16.3	16.3	16.3
1947.....	35.4	7.4	28.0	5.4	3.4	2.0	4.0	9.6	17.8	17.8	17.8
1948.....	37.0	7.4	29.6	6.0	3.4	2.6	4.0	9.2	16.5	16.5	16.5
1949.....	32.2	5.7	26.5	4.1	2.6	1.5	3.1	8.5	18.6	18.6	18.6
1950.....	38.0	7.4	30.6	4.9	3.0	2.0	4.4	10.2	18.9	18.9	18.9
1951.....	37.2	7.7	29.5	5.0	3.3	1.7	4.4	9.2	19.7	19.7	19.7
1952.....	37.5	7.2	30.3	4.1	2.7	1.4	4.5	8.1	20.0	20.0	20.0
1953.....	36.7	7.2	29.5	5.0	3.5	1.5	3.7	7.7	21.1	21.1	21.1
1954.....	36.4	7.0	29.3	4.6	3.0	1.7	4.1	8.6	20.0	20.0	20.0
1955 ³	38.8	7.2	31.6	4.9	3.1	1.8	4.1	8.3	18.4	18.4	18.4
1956 ³	37.1	7.1	30.0	4.8	3.1	1.7	4.0	8.2			
1957 ³	34.8	6.3	28.5	4.6	2.7	1.8	3.6				

¹ Data may not add to total because of rounding.

² Practically all softwoods.

³ Preliminary. Subject to revision.

Source: U. S. Department of Commerce, Bureau of the Census; U. S. Department of Agriculture, Forest Service.

TABLE 6.--Douglas-fir log prices, western Oregon and western Washington, 1910-57

(Dollars per thousand board-feet log scale)

Year	Sawlogs					Peeler logs				
	Grade #1, current dollars	Grade #2, current dollars	Grade #3, current dollars	Average		Grade #1, current dollars	Grade #2, current dollars	Grade #3, current dollars	Average	
				Current dollars	1947-49 dollars				Current dollars	1947-49 dollars
1910.....	12.80	9.80	6.80	9.00	19.60	--	--	--	--	--
1911.....	12.00	9.20	6.10	8.00	19.00	--	--	--	--	--
1912.....	12.00	9.10	6.30	8.00	17.80	--	--	--	--	--
1913.....	13.00	9.50	6.60	8.50	18.70	--	--	--	--	--
1914.....	11.50	8.40	5.50	7.50	16.90	--	--	--	--	--
1915.....	11.00	8.10	5.50	7.00	15.50	--	--	--	--	--
1916.....	12.20	9.40	6.50	8.50	15.30	--	--	--	--	--
1917.....	15.00	12.00	9.00	11.00	14.40	--	--	--	--	--
1918.....	19.50	15.80	11.70	14.50	17.00	--	--	--	--	--
1919.....	22.20	17.90	9.50	17.00	18.80	--	--	--	--	--
1920.....	30.50	24.00	18.00	22.00	22.00	--	--	--	--	--
1921.....	21.00	16.50	12.00	14.50	22.90	--	--	--	--	--
1922.....	23.50	17.00	12.00	15.00	23.90	--	--	--	--	--
1923.....	27.00	20.50	14.50	18.50	28.30	--	--	--	--	--
1924.....	24.00	18.00	13.00	16.00	25.10	--	--	--	--	--
1925.....	24.00	17.00	12.00	15.00	22.30	--	--	--	--	--
1926.....	23.50	18.00	12.00	16.00	24.60	--	--	--	--	--
1927.....	23.00	17.00	12.00	15.00	24.20	--	--	--	--	--
1928.....	23.00	17.50	12.00	15.50	24.60	--	--	--	--	--
1929.....	24.00	18.00	12.50	16.00	25.80	--	--	--	--	--
1930.....	24.00	17.50	12.00	15.50	27.60	--	--	--	--	--
1931.....	17.00	13.00	8.50	11.00	23.20	--	--	--	--	--
1932.....	15.50	11.50	7.50	9.50	22.60	--	--	--	--	--
1933.....	15.50	11.50	8.50	9.50	22.20	--	--	--	--	--
1934.....	18.00	13.00	9.50	11.00	22.60	--	--	--	--	--
1935.....	18.00	13.50	9.00	11.50	22.10	--	--	--	--	--
1936.....	22.50	16.00	10.00	14.00	26.70	29.00	24.00	22.50	25.00	47.60
1937.....	24.00	17.50	11.00	15.50	27.60	31.00	26.50	22.50	27.50	49.00
1938.....	23.00	16.50	10.00	14.50	28.40	31.00	28.00	25.50	29.00	56.80
1939.....	23.00	16.50	10.00	14.50	28.90	32.00	26.50	23.50	27.50	54.90
1940.....	24.00	17.50	10.50	15.50	30.30	34.00	27.00	24.00	28.00	54.80
1941.....	26.00	19.00	12.00	17.00	29.90	38.00	31.00	26.00	32.00	56.30
1942.....	--	--	--	--	--	--	--	--	--	--
1943.....	--	--	--	--	--	--	--	--	--	--
1944.....	--	--	--	--	--	--	--	--	--	--
1945.....	--	--	--	--	--	--	--	--	--	--
1946.....	--	--	--	--	--	--	--	--	--	--
1947.....	42.90	34.70	30.40	33.70	35.00	62.90	55.40	48.10	56.40	58.50
1948.....	49.30	41.10	32.80	39.30	37.70	88.90	78.10	68.90	79.70	76.30
1949.....	50.00	40.60	32.60	39.00	39.30	86.90	72.90	57.00	74.90	75.50
1950.....	57.10	46.20	38.70	44.70	43.40	102.60	89.00	73.60	89.40	86.70
1951.....	60.20	49.40	41.80	47.90	41.70	108.20	97.30	81.80	96.50	84.10
1952.....	64.20	52.40	42.90	50.60	45.40	108.40	98.20	80.70	96.00	86.00
1953.....	62.30	49.70	41.10	48.00	43.60	109.60	98.80	80.20	96.30	87.50
1954.....	60.40	50.20	40.70	48.10	43.60	109.00	98.40	79.60	94.80	85.90
1955.....	64.50	54.60	44.80	52.20	47.20	111.50	102.30	83.40	96.30	87.00
1956.....	68.40	57.90	48.00	55.00	48.10	114.20	105.50	86.20	99.10	86.70
1957.....	67.00	59.00	45.00	55.00	46.50	110.00	101.00	82.00	95.00	80.30

Source: 1910-32, *The Timberman*; subsequent data for the years 1933-56, inclusive, from Pacific Northwest Forest and Range Experiment Station compilation of average annual regional log values based on transactions shown in Pacific Northwest Loggers Association composite sales analyses. 1957, Forest Service estimate.

TABLE 7.--Estimated pulpwood production in the United States, by regions and by hardwoods and softwoods, selected years 1899-1957¹

Year	All regions			North			South			West, total ²
	Total	Hardwoods	Softwoods	Total	Hardwoods	Softwoods	Total	Hardwoods	Softwoods	
	Million cords	Million cords	Million cords	Million cords	Million cords	Million cords	Million cords	Million cords	Million cords	Million cords
1899.....	1.6	0.5	1.2	1.4	0.5	1.0	--	--	--	0.2
1905.....	2.5	.4	2.1	2.5	.4	2.1	0.1	--	0.1	--
1910.....	3.1	.8	2.3	2.8	.7	2.1	.3	0.1	.1	.1
1916.....	4.4	.7	3.7	4.2	.6	3.6	.2	.2	.1	--
1920.....	5.0	.8	4.3	4.5	.5	4.0	.4	.3	.1	.2
1925.....	5.0	.7	4.3	4.1	.4	3.7	.6	.3	.3	.3
1930.....	6.1	.8	5.3	3.9	.4	3.5	1.0	.4	.5	1.2
1935.....	6.6	.9	5.7	2.9	.3	2.6	1.4	.6	.9	2.2
1941.....	14.2	1.8	12.3	4.4	1.1	3.3	7.2	.7	6.4	2.6
1942.....	14.9	1.9	13.0	5.0	1.2	3.8	7.3	.7	6.6	2.6
1943.....	13.6	1.8	11.8	4.0	1.1	2.9	7.1	.7	6.5	2.5
1944.....	15.3	2.0	13.4	4.6	1.0	3.5	8.2	1.0	7.2	2.6
1945.....	15.3	2.2	13.1	4.7	1.1	3.6	8.1	1.1	7.0	2.5
1946.....	17.0	2.6	14.4	5.6	1.4	4.2	8.8	1.2	7.6	2.6
1947.....	18.5	2.5	16.0	5.6	1.3	4.3	9.3	1.2	8.1	3.6
1948.....	20.0	2.5	17.5	5.4	1.2	4.2	11.4	1.3	10.1	3.3
1949.....	17.6	2.3	15.3	4.6	1.3	3.3	9.9	1.0	8.9	3.1
1950.....	20.7	2.9	17.8	5.0	1.7	3.3	12.4	1.2	11.2	3.3
1951.....	25.1	3.8	21.3	6.3	2.2	4.1	14.1	1.6	12.5	4.7
1952.....	25.1	3.7	21.4	6.0	1.9	4.1	14.6	1.8	12.8	4.5
1953.....	26.3	4.2	22.1	5.4	2.2	3.2	16.2	2.0	14.2	4.7
1954.....	27.0	4.8	22.2	5.5	2.6	2.9	16.4	2.2	14.2	5.1
1955.....	30.9	5.3	25.6	6.3	2.7	3.6	18.4	2.6	15.8	6.2
1956.....	35.2	6.1	29.1	7.3	3.2	4.1	20.3	2.9	17.4	7.6
1957 ³	34.0	5.8	28.2	7.0	3.1	3.9	19.6	2.7	16.9	7.4

¹ Data may not add to totals because of rounding.² Practically all softwoods.³ Preliminary. Subject to revision.

Source: U. S. Department of Commerce, Bureau of the Census; U. S. Department of Agriculture, Forest Service.

TABLE 8.--Pulpwood prices at local delivery points, 1933-57

(Dollars per standard cord, including bark)

Year	Southern pine ¹		Lake States spruce ²	
	Current dollars	1947-49 dollars	Current dollars	1947-49 dollars
1933.....	--	--	7.75	18.10
1934.....	--	--	7.25	14.90
1935.....	--	--	7.75	14.90
1936.....	--	--	7.50	14.30
1937.....	--	--	9.75	17.40
1938.....	3.60	7.00	8.50	16.60
1939.....	3.90	7.80	9.00	18.00
1940.....	4.20	8.20	9.00	17.60
1941.....	4.60	8.10	10.50	18.50
1942.....	6.00	9.30	12.25	19.10
1943.....	7.20	10.70	14.75	22.00
1944.....	8.20	12.10	15.00	22.20
1945.....	8.40	12.20	15.00	21.80
1946.....	10.10	12.80	16.50	21.00
1947.....	11.00	11.40	23.75	24.60
1948.....	11.70	11.20	22.25	21.30
1949.....	11.00	11.10	18.50	18.60
1950.....	11.90	11.50	19.50	18.90
1951.....	13.80	12.00	22.50	19.60
1952.....	13.90	12.50	26.50	23.70
1953.....	13.90	12.60	24.75	22.50
1954.....	14.00	12.70	24.75	22.40
1955.....	14.40	13.00	24.75	22.40
1956.....	15.30	13.40	26.75	23.40
1957.....	15.30	13.10	27.25	23.30

¹ Source: U. S. Department of Agriculture, Forest Service (18).² Source: University of Wisconsin Extension Forestry Office (25).

TABLE 9.--Supplies, requirements, and prices for rosin, by types; selected crop years beginning April 1, 1930, and annually, 1948 through 1957 (520-lb. drums)

Crop year beginning April 1, and commodity and type	Supply				Requirements			Carry-out stocks ¹	Average price per 100 lbs. net
	Carry-in stocks ¹	Production	Imports	Total supply	Domestic	Export	Total		
1930:	Drums	Drums	Drums	Drums	Drums	Drums	Drums	Drums	Dollars
Gum.....	(²)	1,620,726	725	(²)	³ 605,093	834,907	³ 1,440,000	(²)	2.18
Steam-distilled wood.....	(²)	351,134	0	(²)	³ 204,782	140,603	³ 345,385	(²)	--
Total.....	487,200	1,971,860	725	2,459,785	809,875	975,510	1,785,385	674,400	--
1935:	(²)	1,360,950	2,290	(²)	³ 789,648	740,352	³ 1,530,000	(²)	1.97
Gum.....	(²)	460,243	0	(²)	³ 240,784	223,198	³ 463,982	(²)	--
Steam-distilled wood.....									
Total.....	783,144	1,821,193	2,290	2,606,627	1,030,432	963,550	1,993,982	612,645	--
1940:	1,127,719	938,911	1,788	2,068,418	525,494	220,337	745,831	1,322,587	1.98
Gum.....	127,798	778,581	0	906,379	526,165	203,473	729,638	176,741	--
Steam-distilled wood.....									
Total.....	1,255,517	1,717,492	1,788	2,974,797	1,051,659	423,810	1,475,469	1,499,328	--
1945:	265,881	694,476	9,795	970,152	627,294	105,354	732,648	237,504	6.50
Gum.....	122,385	757,560	0	879,945	640,095	101,456	741,551	138,394	--
Steam-distilled wood.....									
Total.....	388,266	1,452,036	9,795	1,850,097	1,267,389	206,810	1,474,199	375,898	--
1948:	162,090	921,210	1,071	1,084,381	370,583	236,228	606,811	477,570	7.39
Gum.....	115,890	1,154,890	0	1,270,780	864,071	266,049	1,130,120	140,660	--
Steam-distilled wood.....									
Total.....	277,980	2,076,110	1,071	2,355,161	1,234,654	502,277	1,736,931	618,230	--
1949:	477,570	924,900	4,229	1,406,699	347,152	256,927	604,079	802,620	6.47
Gum.....	140,660	1,098,610	0	1,239,270	842,512	305,098	1,147,610	91,660	--
Steam-distilled wood.....	0	4,000	0	4,000	0	0	0	4,000	--
Tall oil ³									
Total.....	618,230	2,027,510	4,229	2,649,969	1,189,664	562,025	1,751,689	898,280	--
1950:	802,620	797,620	4,475	1,604,715	550,584	595,591	1,146,175	458,540	6.31
Gum.....	91,660	1,339,410	0	1,431,070	985,348	345,682	1,331,030	100,040	--
Steam-distilled wood.....	4,000	35,000	0	39,000	37,000	(⁴)	37,000	2,000	--
Tall oil ³									
Total.....	898,280	2,172,030	4,475	3,074,785	1,572,932	941,273	2,514,205	560,580	--
1951:	458,540	716,350	1,980	1,176,870	392,190	293,140	685,330	491,540	8.73
Gum.....	100,040	1,333,040	0	1,433,080	923,479	278,561	1,202,040	231,040	--
Steam-distilled wood.....	2,000	35,000	0	37,000	30,000	(⁴)	30,000	7,000	--
Tall oil ³									
Total.....	560,580	2,084,390	1,980	2,646,950	1,345,669	571,701	1,917,370	729,580	--
1952:	491,540	638,360	3,000	1,132,900	312,563	138,577	451,140	681,760	7.53
Gum.....	231,040	1,082,530	0	1,313,570	917,178	218,062	1,135,240	178,330	--
Steam-distilled wood.....	7,000	30,000	0	37,000	31,000	(⁴)	31,000	6,000	--
Tall oil ³									
Total.....	729,580	1,750,890	3,000	2,483,470	1,260,741	356,639	1,617,380	866,090	--
1953:	681,760	531,620	1,410	1,214,790	348,050	132,100	480,150	734,640	7.72
Gum.....	178,330	1,213,340	0	1,391,670	913,880	384,350	1,298,230	93,440	--
Steam-distilled wood.....	6,000	35,000	0	41,000	37,000	(⁴)	37,000	4,000	--
Tall oil ³									
Total.....	866,090	1,779,960	1,410	2,647,460	1,298,930	516,450	1,815,380	832,080	--
1954:	734,640	527,700	390	1,262,730	345,220	208,840	554,060	708,670	7.91
Gum.....	93,440	1,342,370	0	1,435,810	887,420	458,470	1,345,890	89,920	--
Steam-distilled wood.....	4,000	50,000	0	54,000	49,000	(⁴)	49,000	5,000	--
Tall oil ³									
Total.....	832,080	1,920,070	390	2,752,540	1,281,640	667,310	1,948,950	803,590	--
1955:	708,670	452,970	650	1,162,290	406,689	151,091	557,780	604,510	8.45
Gum.....	89,920	1,369,440	0	1,459,360	945,892	400,598	1,346,490	112,870	--
Steam-distilled wood.....	5,000	125,000	0	130,000	115,000	(⁴)	115,000	15,000	--
Tall oil ³									
Total.....	803,590	1,947,410	650	2,751,650	1,467,581	551,689	2,019,270	732,380	--
1956:	604,510	444,590	520	1,049,620	347,320	136,050	483,370	566,250	8.37
Gum.....	112,870	1,324,220	0	1,437,090	875,260	467,960	1,343,220	93,870	--
Steam-distilled wood.....	15,000	225,000	0	240,000	210,000	(⁴)	210,000	30,000	--
Tall oil ³									
Total.....	732,380	1,993,810	520	2,726,710	1,362,580	604,010	2,036,590	690,120	--
1957: ³	566,000	430,000	1,000	997,000	267,000	130,000	397,000	600,000	7.90
Gum.....	94,000	1,240,000	0	1,334,000	839,000	400,000	1,239,000	95,000	--
Steam-distilled wood.....	30,000	290,000	0	320,000	285,000	(⁴)	285,000	35,000	--
Tall oil ³									
Total.....	690,000	1,960,000	1,000	2,651,000	1,391,000	530,000	1,921,000	730,000	--

¹ Includes CCC loan stocks. These are gross stocks and include rosin sold and awaiting shipment.² No breakdown practicable from existing information.³ Estimated.⁴ Exports of tall oil rosin are combined with steam-distilled wood rosin exports as reported by the Bureau of the Census. Consequently, the estimated domestic consumption of tall oil rosin necessarily includes steam-distilled wood rosin to the extent of such tall oil rosin exports.

Source: Reports of Agricultural Marketing Service, U.S.D.A.; and Bureau of the Census, Department of Commerce; records of Commodity Stabilization Service, U.S.D.A.

TABLE 10.--Supplies, requirements, and prices for turpentine, by types; selected crop years beginning April 1, 1930, and annually, 1948 through 1957, (50-gal. barrels)

Crop year beginning April 1, and commodity and type	Supply				Requirements			Carry-out stocks ¹	Average price per gallon
	Carry-in stocks ¹	Production	Imports	Total supply	Domestic	Export	Total		
1930:	Barrels	Barrels	Barrels	Barrels	Barrels	Barrels	Barrels	Barrels	Dollars
Gum.....	(2)	598,769	7,931	(2)	³ 288,516	309,484	³ 598,000	(2)	0.333
Wood (total).....	(2)	86,533	0	(2)	84,404	17,829	³ 102,233	(2)	--
Steam-distilled.....	(2)	76,366	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	3,969	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	6,198	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	127,000	685,302	7,931	820,233	372,920	327,313	700,233	120,000	--
1935:	(2)	497,000	12,495	(2)	³ 269,918	205,082	³ 475,000	(2)	.376
Gum.....	(2)	105,908	0	(2)	³ 82,326	19,300	101,626	(2)	--
Wood (total).....	(2)	88,875	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	11,712	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	5,321	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	5,321	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	191,359	602,908	12,495	806,762	352,244	224,382	576,626	230,136	--
1940:	167,943	343,938	16,688	528,569	278,707	103,127	381,834	146,735	.240
Gum.....	52,324	222,403	0	274,727	183,824	27,728	211,552	63,175	--
Wood (total).....	(2)	161,161	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	54,081	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	7,161	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	7,161	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	220,267	566,341	16,688	803,296	462,531	130,855	593,386	209,910	--
1945:	168,011	244,252	14,932	427,195	301,996	67,111	369,107	58,088	.791
Gum.....	34,535	243,879	0	278,414	210,419	25,334	235,753	42,661	--
Wood (total).....	(2)	129,101	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	110,262	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	4,516	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	4,516	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	202,546	488,131	14,932	705,609	512,415	92,445	604,860	100,749	--
1948:	87,390	324,330	13,613	425,333	227,287	70,916	298,203	127,130	.428
Gum.....	107,960	334,810	0	442,770	294,442	45,768	340,210	102,560	--
Wood (total).....	(2)	207,160	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	124,870	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	2,780	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	2,780	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	195,350	659,140	13,613	868,103	521,729	116,684	638,413	229,690	--
1949:	127,130	323,010	14,170	464,310	240,380	99,270	339,650	124,660	.384
Gum.....	102,560	350,280	0	452,840	315,256	56,284	371,540	81,300	--
Wood (total).....	(2)	199,630	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	147,500	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	3,150	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	3,150	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	229,690	673,290	14,170	917,150	555,636	155,554	711,190	205,960	--
1950:	124,660	271,880	16,771	413,311	239,940	137,771	377,711	35,600	.551
Gum.....	81,300	436,670	0	517,970	354,117	70,693	424,810	93,160	--
Wood (total).....	(2)	237,080	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	194,180	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	5,410	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	5,410	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	205,960	708,550	16,771	931,281	594,057	208,464	802,521	128,760	--
1951:	35,600	246,460	19,092	301,152	174,571	67,251	241,822	59,330	.763
Gum.....	93,160	437,500	0	530,660	352,286	43,254	395,540	135,120	--
Wood (total).....	(2)	229,590	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	203,430	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	4,480	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	4,480	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	128,760	683,960	19,092	831,812	526,857	110,505	637,362	194,450	--
1952:	59,330	217,360	19,636	296,326	173,084	43,042	216,126	80,200	.534
Gum.....	135,120	347,580	0	482,700	294,635	39,115	333,750	148,950	--
Wood (total).....	(2)	175,090	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	169,560	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	2,930	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	2,930	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	194,450	564,940	19,636	779,026	467,719	82,157	549,876	229,150	--
1953:	80,200	177,680	22,830	280,710	156,500	34,880	191,380	89,330	.516
Gum.....	148,950	360,170	0	509,120	348,470	53,070	401,540	107,580	--
Wood (total).....	(2)	193,090	0	(2)	(2)	(2)	(2)	(2)	--
Steam-distilled.....	(2)	164,220	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	2,860	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	2,860	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	229,150	537,850	22,830	789,830	504,970	87,950	592,920	196,910	--

See footnotes at end of table.

TABLE 10.--Supplies, requirements, and prices for turpentine, by types; selected crop years beginning April 1, 1930, and annually, 1948 through 1957, (50-gal. barrels)--Continued

Crop year beginning April 1, and commodity and type	Supply				Requirements			Carry-out stocks ¹	Average price per gallon
	Carry-in stocks ¹	Production	Imports	Total supply	Domestic	Export	Total		
1954:	Barrels	Barrels	Barrels	Barrels	Barrels	Barrels	Barrels	Barrels	Dollars
Gum.....	89,330	175,940	15,360	280,630	145,950	50,240	196,190	84,440	.519
Wood (total).....	107,580	441,860	0	549,440	392,150	65,620	457,770	91,670	--
Steam-distilled.....	(2)	207,700	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	231,750	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	2,410	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	196,910	617,800	15,360	830,070	538,100	115,860	653,960	176,110	--
1955:									
Gum.....	84,440	149,000	18,441	251,881	133,866	45,845	179,711	72,170	.556
Wood (total).....	91,670	506,540	0	598,210	442,581	56,119	498,700	99,510	--
Steam-distilled.....	(2)	201,270	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	302,970	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	2,300	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	176,110	655,540	18,441	850,091	576,447	101,964	678,411	171,680	--
1956:									
Gum.....	72,170	143,830	20,990	236,990	127,160	64,700	191,860	45,130	.555
Wood (total).....	99,510	501,100	0	600,610	430,680	60,450	491,130	109,480	--
Steam-distilled.....	(2)	194,750	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	305,310	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	1,040	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	171,680	644,930	20,990	837,600	557,840	125,150	682,990	154,610	--
1957:									
Gum.....	45,000	138,000	21,000	204,000	107,000	45,000	152,000	52,000	.555
Wood (total).....	110,000	492,000	0	602,000	427,000	55,000	482,000	120,000	--
Steam-distilled.....	(2)	181,000	0	(2)	(2)	(2)	(2)	(2)	--
Sulfate.....	(2)	310,000	0	(2)	(2)	(2)	(2)	(2)	--
Destructive-distilled.....	(2)	1,000	0	(2)	(2)	(2)	(2)	(2)	--
Total.....	155,000	630,000	21,000	806,000	534,000	100,000	634,000	172,000	--

¹ Includes CCC loan stocks (beginning 1935). These are gross stocks and include turpentine sold and awaiting shipment.² No breakdown practicable from existing information.³ Estimated.

Source: Reports of Agricultural Marketing Service, U.S.D.A., and Bureau of the Census, Department of Commerce.

